V. 19

DOMINA RERUM SAPIENTIA

Library
of the
Academy of Medicine
Toronto.
15353

1924

CARSWELL Co., Limited
Bookbinders,
PRINTERS,
LAW BOOKS,
PUBLISHERS, etc.
TORONTO
ONT.

THE

AMERICAN JOURNAL
OF
OPHTHALMOLOGY

INDEX TO VOL. XIX.

1902.

EDITED BY

ADOLF ALT, M.D.

LIBRARY
JUN 2 0 2002
RSITY OF TOR

ST. LOUIS, MO.
1902.

ACADEMY OF MEDICINE TORONTO

AUTHORS OF ORIGINAL ARTICLES.

Alt, A.
Ayres, S. C.
Beard, Ch. H.
Brunson, R.
Burnett, S. M.
Colburn, J. E.
Culbertson, L. R.
Ewing, A. E.
Friedenwald, H.
Griffin, O. A.
Henderson, F. L.
Hotz, F. C.
Jackson, E.
Kipp, Ch. J.
Landman, O.
Minor, C. L.
Prince, A. E.
Stillson, J. O.
Suker, G. F.
Vail, D. T.
Wescott, C. D.
Wuerdemann, H. V.

THE AMERICAN JOURNAL
OF
OPHTHALMOLOGY.

VOL. XIX. JANUARY, 1902. No. 1.

ORIGINAL ARTICLES.

POST-OPERATIVE ACCIDENTS FOLLOWING SUCCESSFUL CATARACT EXTRACTIONS.

By DR. S. C. AYRES,
CINCINNATI, O.

F. E., 70 years of age, was operated on April 27, 1900. He had at the time a mature cataract in the right eye and a progressive cataract in the left. The operation in the right eye was done with iridectomy. The healing was uncomplicated, and a month later he had v. = $^6/_9$ with proper correcting lens. Ten months later—February, 1901—I was called to see him and found the following condition: The globe was injected, the anterior chamber empty, and tension very much reduced. He said that he had had some pain during the night previous and awoke with his hand pressing on his eye. The only theory to explain this condition was that he had struck the eye during sleep and ruptured the incision, thus allowing the aqueous to escape. The eye was bandaged, and in the course of two or three days the wound closed, and the anterior chamber was re-established; vision was partially restored only. The eye was sensitive to light and tender to touch. The iris was somewhat discolored and the ciliary zone deeply injected. A few days later I found the anterior chamber empty from leakage of the aqueous. From this time on a chronic iridocyclitis set in, which gradually impaired the sight, until finally the eye became quite blind. The globe varied in tension from + to —, but was not very painful. In my opinion the original injury which ruptured the corneal incision was accompanied by intraocular hæmorrhage and some damage to the ciliary body. This set up the chronic inflammation, which continued for several weeks and resulted in entire loss of vision.

J. L., aged 63, was operated for cataract Nov. 17, 1900. Preliminary iridectomy and trituration had been done on the eye about ten months previously. The extraction was uncomplicated, and no untoward symptoms occurred. Vision $= {}^{5}/_{30}$. Four months later—March, 1901—he came to me with a large hæmorrhage in the anterior chamber. The eye itched a little, and he thinks he rubbed it at night. There was no pain in the eye, nor tenderness in the ciliary region. Vision was of course reduced to perception of light. Under the influence of warm formentations the blood slowly absorbed and finally disappeared. In June vision $= {}^{6}/_{200}$ and improving. A secondary membrane formed, but this was not interfered with.

In this case the man had been a steady drinker, and I thought at first there might be some toxic amblyopia, and put him upon treatment and delayed the extraction for several months. He was also a great sufferer from articular rheumatism and at times was confined to his bed.

He attributed the hæmorrhage to the rubbing, as he awoke from sleep with his hand on his eye, and experienced some pain for a short time.

W. A., aged 68, was operated on four years ago. She had mature lenses in each eye, with good perception and projection. The right lens was removed by simple extraction, and the result was excellent. There was a round central active pupil, and the recovery from the operation was prompt and uncomplicated. In May, 1901, I examined her and found the eye entirely blind, the iris discolored, pupil closed by dense membrane, and tension minus. She says she could see until about two weeks ago, when it suddenly failed. She stated that she awoke up at night with her fingers pressing the eye ball. While she attributed the loss of vision to the pressure on her eye, it does not seem clear that this is the case. For some time past she had had attacks of transient dimness as if a cloud was passing, but these did not last long. The globe looked as if it had suffered from an iridochoroditis, and probably her injury to the eye caused an intraocular hæmorrhage.

It is rather exceptional for an eye to retain good vision for nearly four years and then suddenly develop an iridocyclitis.

In considering these cases there is no question about the trauma in the first case. The empty anterior chamber and the lessened tension are conclusive evidences, as well as the statement of the patient himself. That this should have occurred so many months after a smooth, uncomplicated operation is rather unusual.

In the second case also the hæmorrhage seems due to the rubbing of his eye. His physical condition was bad at the time, as he was just recovering from an attack of rheumatism.

In the third case it is not so clear that the loss of the eye was due to an injury, although it may have precipitated its final loss. Her sight was fairly good until about two weeks before the eye became blind. But the appearance of the eye indicated that the inflammation had been of longer duration. The general expectation is that a successful extraction will afford good vision for the balance of our life (barring secondary membranes), but these cases were so exceptional I deemed them worthy of record.

PAMPHLETS RECEIVED.

"Removal of the Tonsils," by J. M. Kershaw, M.D.

"Winter Cures in High Mountains," by W. Erb, M.D.

"The Clearing Up of Corneal Scars," by E. Fuchs, M.D.

"The Climate of Long Island," by Le G. N. Denslow, M.D.

"Operation for Rendering Artificial Eyes Mobile," by H. Wolff, M.D.

"The Cataphoric Treatment of Cancer," by G. B. Massey, M.D.

A CASE OF TRAUMATIC RETROFLEXION OF THE IRIS, ANATOMICALLY EXAMINED.

By ADOLF ALT, M.D.

IN the October number (1899) of this journal L. W. Beardsley of this city published an article on "Introversion of the Iris," in which he related the clinical history of a case of this comparatively rare affection. In this paper he states that "those who have been so fortunate as to secure the affected eye for examination have found that the iris is turned inward in part or entirely, the introverted portion lying backwards upon the ciliary body, and is invisible." From these remarks it might appear that quite a large number of such cases had been anatomically examined. As far as I know, however, and can find in the large collection of works at my disposal, all modern writers on this subject, as Praun, De Wecker, Fuchs, Foerster, and others, have failed to add new anatomical evidences as regards this affection. They all refer back to Schmidt and von Ammon. Fuchs gives a schematic drawing to show the manner in which the condition might come about, but it is purely theoretical.

It is strange, but it seems, therefore, that von Ammon's examination of two eyes with retroflexion of the iris, made about 47 years ago, is the only one on record. His examination was purely macroscopical by dissecting the eyes under water; neither did he give an illustration with his paper. (See von Graefe's Archiv für Ophthalmologie, V. 1, 2, pages 119 and 299, 1855) on "*The Disappearance of the Iris by Retroflexion Anatomically Proven.*" After having given the description of the unopened eye, examined by oblique illumination and with Coccius' ophthalmoscope, he says: "The anatomical examination gave the following results: When the sclerotic was severed from the cornea a few lines behind the corneo-scleral junction, both of these membranes were found to be normal. In its external (temporal) part the iris was in its normal position, its inner (nasal), upper and lower parts were perfectly retroflected towards the fundus of the eye. The vitreous body was shifted upwards, the lens which lay intact in its intact capsule touched with its upper edge the middle of the upper ciliary processes, its lower edge lay about in the middle of the abnormally enlarged pupil, forming a concavo-convex line through its middle. The lower part of the vitreous body was shifted upwards and lay against the posterior surface of the cornea. There was, therefore, a retroversio partialis lentis at corporis vitrei."

In this case the retroflexion of the iris was produced by a fatal trauma (suicide).

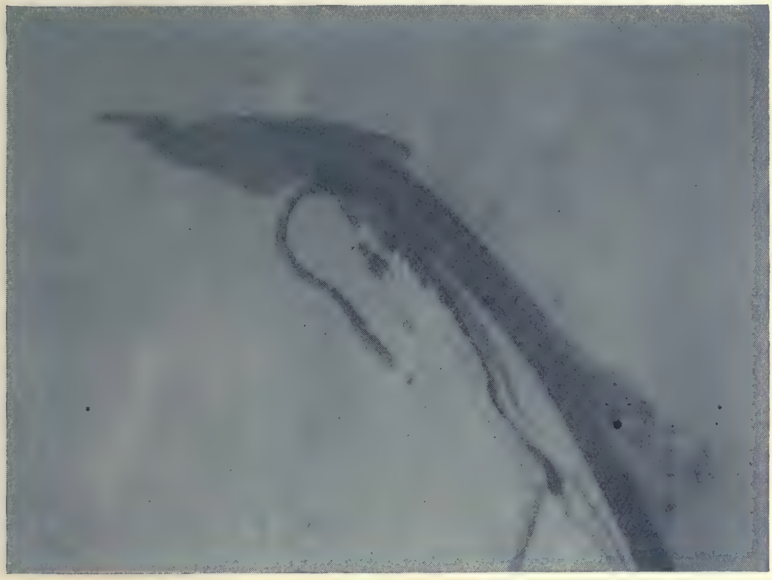


FIG 1.

The clinical appearance of these cases of total or partial retroflexion of the iris is now well known and described in every larger text-book; it need, therefore, find no place here.

Through the kindness of my friend, Dr. J. M. Ray of Louisville, Ky., I have been so fortunate as to obtain an eye with traumatic partial retroflexion of the iris. If I am correct this would be the first eye with this affection examined microscopically.

The eye had been hardened in formal solution and the characteristic clinical appearance of a partial retroflexion of the iris could well be seen. On one (the upper) side the iris had apparently disappeared altogether, while on the diametrically opposite side (downwards) the peripheral part of the iris was seen to lie close to the posterior surface of the cornea, while its sphincter edge also was tilted backwards. The crystalline lens which had been dislocated was floating about in the fluid vitreous body, which with the lens escaped when the eye was cut in two.

After this had been done the retroflexion of the iris was even more plainly visible, and no doubt as to the diagnosis remained. It was also clear that the iris was not, as is usually described, adherent to the ciliary processes, but quite a considerable space intervened between iris and ciliary body, which seemed to have been occupied by vitreous body. The crystalline lens was smaller and more spherical than normal. The optic nerve showed a glaucomatous excavation.

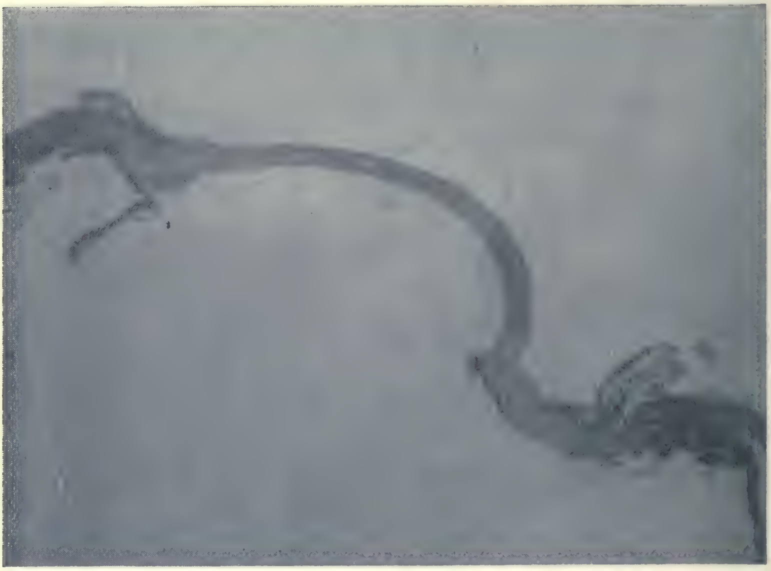


FIG. 2.

Other pathological changes which the eyeball showed have no bearing on this particular description.

In microscopic section (see Fig. 1) through the parts in which the iris had totally disappeared it was seen that for a short distance the most peripheral part of the iris was adherent to the compressed ligamentum pectinatum, thus occluding the filtration angle. Leber's venous plexus was obliterated. From where Descemet's membrane begins the iris was turned backwards in a gentle curve and not abruptly, as it usually appears to be when looked at through the cornea. In this manner quite an open space was left between the uveal surface of the iris and the ciliary processes, in which remnants of vitreous body are seen lying. The tissue of the iris is thinner than usual, its blood vessels have very thick walls and contain blood. This thinness of the iris is partly due to stretching and partly to the atrophy of the tissue. The uveal layer is perfectly unaltered. A peculiar appearance is that, at the pupillary margin, contrary to the conditions which obtain when the iris lies in its normal plane, the parenchyma of the iris protrudes over the uveal layer and the sphincter pupillæ, thus overlapping it in a pouch-like manner.

The ciliary body and processes are atrophic to a considerable degree. Fragments of vitreous body and torn fibres of the suspensory ligament adhere to the inner surface.

In sections passing through the pupil a little aside from its largest diameter the conditions are in so far altered, as the part of the iris which is tilted backwards grows gradually smaller. On the diametrically opposite side (see Fig. 2) the atrophic iris is attached to Descemet's membrane almost up to its pupillary margin, which latter alone is tilted backwards. Thus, while we have to deal with a partial retroflexion, the sphincter edge of the iris is tilted backwards all around the pupil. As the crystalline lens fell out of its position, it is impossible to say just how it was situated after the trauma. That it was, however, torn from its suspensory ligament all around its periphery is proven by the very fact of its having fallen out when the eye was cut in two, as also by the shreds of the fibres of the suspensory ligament which remain attached to the atrophic ciliary body.

Probably the lower edge of the lens pressed the periphery of the iris against the cornea, while its upper edge was tilted backwards where the total retroflection of the iris has taken place.

The manner in which the retroflexion of the iris takes place has given rise to a great deal of theoretical reasoning. I still think that Von Ammon's explanation, or a similar one, may be the correct one. The trauma as it flattens the cornea compresses the contents of the eyeball, which cannot escape. Yet the force of the impact, having torn the suspensory ligament and caused a dislocation of the crystalline lens, which thus no longer supports the pupillary edge of the iris, at the same time tilts the iris backwards. As the force is released and the contents of the eyeball rebound, the retroflexed iris is held in the abnormal position by the dislocated lens. This may be aided in by hæmorrhage and the entrance of vitreous into the anterior chamber. The sphincter pupillæ probably is at once paralyzed by the injuring force.

PAMPHLETS RECEIVED.

"The Electric Skiascope," by H. Wolff, M.D.

"Roentgen Rays in the Treatment of the Skin," by W. A. Pusey, M.D.

"Reflex Aural Symptoms Dependent Upon Dental Caries," by E. B. Dench, M.D.

"Sympathicus Resection in Glaucoma," by M. Ziehe, M.D., and Th. Axenfeld, M.D.

"The Relation of the Medical Editor to Original Communications," by H. W. Moyer, M.D.

"A Series of Demonstration Lenses Intended for Teaching Purposes," by Ch. A. Oliver, M.D.

Clinical and Pathological Papers from the Lakeside Hospital, Cleveland, O., Series I., 1901.

"Susceptibility to Disease and Physical Development in College Women," by A. McDonald, M.D.

"Two Cases of Glioma of the Retina," by G. E. de Schweinitz, M.D., and E. A. Shumway, M.D.

"A Clinical and Histological Study of a Case of Circum-Corneal Hypertrophy of the Conjunctiva," by Ch. A. Oliver, M.D.

"Pathologische Veraenderungen des Lichtreflexes der Macula lutea: Chorioditis, Retinitis Serosa Centralis Acuta," by H. Wolff, M.D.

TRANSLATIONS.

ON THE MOTILITY OF THE PUPIL IN SEVERE OPTIC NEURITIS.*

BY J. HIRSCHBERG, M.D.,
BERLIN, GERMANY.

Translated by Adolf Alt, M.D.

IT is really astonishing that the oldest observation of the movements of the pupil which Galenos made use of in order to decide whether a cataract operation offered the chances of restoring vision, is not mentioned any longer in modern text-books. In Galenos' work on the causes of the symptoms (I. c. 2, B. VII., page 89, of Kuhn's edition) the following is stated: " Those cataract patients whose pupil dilates, when the fellow eye is covered, may hope to see after the cataract operation."

It is rather surprising, but is explained by his doctrine of the innervation-air—which was said to penetrate from the brain to the pupil—that he did not explore the reflex motility of the eye to be operated on while the fellow eye was covered. Great honor is, however, due to his faculty of observation that he at all recognized the slight dilatation of the pupil which takes place in an eye afflicted with an uncomplicated cataract, when the fellow eye is shaded, for this dilatation is but very slight, although it is never wanting. If in an individual with two healthy eyes one is covered, a slight dilatation of the pupil occurs in the fellow eye.†

We have made numerous examinations and measurements of this *physiological* dilatation. It amounts to about 1 mm. in a medium pupil width of 3 to 4 mm.‡

---

*Berliner Klinische Wochenschrift, Nov. 25, 1901.

†Of course in the covered eye the same slight degree of dilatation takes place. This holds good in man, but not in the rabbit, for instance.

‡My volunteer assistant, Dr. Altmann, has at my instance made a large series of observations at my clinic, of which I will mention the following samples: (1) In an emmetrope 7 years old, when the fellow eye is covered the pupil is dilated from 4 mm. to 5 mm. (2) In an emmetrope 36 years of age, from 3 to 4 mm. (3) In an emmetrope 60 years the same. The source of light was a Wellsbach burner at 1 meter distance, in a dark room.

Things lie differently, as is well known nowadays, with the *pathological* dilatation of the pupil which occurs in an eye totally blind through an interruption in the optic nerve conduction, but is otherwise unaltered, as soon as the healthy eye is covered.

Let us consider a case of recent section of the optic nerve of one eye.* As a rule *both* pupils show a medium dilatation. As soon as the *healthy* eye is covered the pupil of the *blind* eye is dilated to an *extraordinary degree;* it does not contract when light is thrown into the blind eye, but very forcibly when the healthy eye is illuminated.

Since, then, when the optic nerve has recently been severed, and also in recent blindness from optic neuritis,† the ophthalmoscope may at first reveal *nothing abnormal*, the presence of this pathological dilatation of the pupil, that is, of this indirect pupil reaction, is an almost *infallible symptom* by which to prove actually that one eye is totally blind.

When, however, this sign is wanting, when the pupil reacts in the eye which is said to be blind in the same normal way as in the healthy fellow eye, we have to find out whether we have to deal with a malingerer or a hysteric.

It is not always possible to separate these two spheres absolutely, since they really pass over into each other. Yet I do not now want to follow up this thought, but I want to show how, in cases in which *a priori* the diagnosis of hysteria seems perfectly justified, the dilatation of the pupil secures at once, or at least at an early period, the assumption of a material, inflammatory disease, while the ophthalmoscope can bring the proof only at a later date.

Of course we must not forget, as I have shown at an earlier occasion, that an acute post-bulbar optic neuritis runs uniformly through the following stages: First there is impairment of vision (blindness) with a normal fundus. Then impairment of vision with a pathological fundus, and finally (in the favorable cases) cure of the impairment of vision with permanent, though often very trivial, changes at the optic nerve entrance.

---

*Cf. my Einf. in. d. Augenheilk, I., page 77.

†Cf. my communications on independent optic neuritis CBl. f. A. Nov., 1887, where I have described the pupillary phenomena and discussed the stages of the disease.

On May 7, 1901, a young lady of good family, 21 years old, consulted me at the instance of Privy Councillor Jolly, whom I have to thank for the following details:

"Miss X. has been known to me for two years. Her nervous malady dates from 1895. At that time she is said to have had a left-sided hemiplegia with diplopia (paresis of abducens). In the following years the symptoms varied considerably. There was numbness of the right, at other times of the left side. Two years ago there were symptoms of a general nervosity and weakness with pronounced anæmia. After the exhibition of iron and two courses at Rippoldsau, the patient was almost well during last winter, but became again sick after having suffered a few weeks previously from a severe contusion of the hip, which had frightened her very much. When on May 2d she came to see me, both legs were numb, especially the left one. She also complained of impairment of vision in the right eye. Since on that date the pupillary reaction was perfectly normal, I assumed again a hysterical affection due to anæmia. Nothing warrants the assumption of an inherited or acquired lues."

As the impairment of vision in the right eye grew daily worse and worse, the patient was brought to me May 7, 1901.

Left eye normal; right eye totally blind. No trace of light perception. The fundus, however, even in the upright image, shows absolutely nothing abnormal; it cannot even be called anæmic. The most important symptom is the pupillary reaction. Both pupils are of medium width, about 3½ mm., in medium daylight. As soon as the left healthy eye is covered with the hand, the pupil of the right eye is within one or two seconds forcibly dilated to a width of almost 8 mm., and remains unchanged at this width under the stimulus of light until light is allowed to enter the healthy eye. Movements of the right eye cause a slight pain.

Based on these symptoms, I was forced to assume an inflammation of the right optic nerve behind the eyeball. Neither a general examination of the whole body (especially of the urine) nor of the cavities in the neighborhood of the optic nerve yielded the slightest facts to explain the cause of this affection. I ordered therefor, as in cases of so-called simple optic neuritis, salicylate of sodium to produce perspiration and iodide of potassium, both in moderate quantities, and kept the patient in bed.

Two days later—May 9, 1901—the pain when moving the eyeball, the blindness of the right eye, and the dilatation of its pupil when the left one was covered, were as yet unchanged.

But the ophthalmoscope showed now plainly an optic neuritis of the right eye, engorgement of the blood-vessels, indistinct outlines, dimness of the substance and projection of the optic papilla for 0.75 mm. above the surrounding retina. Left eye perfectly normal.

On May 13, 1901, the blindness and dilatation of the pupil were the same. But two favorable symptoms were now noticed: (1) The pupil widely dilated by covering the healthy eye, contracted a little when illuminated after shading; (2) the optic neuritis has somewhat receded.

On May 17, 1901, the two favorable symptoms were more pronounced. The projection of the papilla was only 0.3 mm., and the eye which for more than a week had been totally blind without a trace of light perception began to see again. It counted fingers at one meter and had a field of vision of normal expanse with a central scotoma.

On May 21, 1901, it counted fingers at 4 meters. Visual field of normal size, with central scotoma. The optic papilla no longer swollen. When the left eye was covered the pupil of the right eye became still widely dilated, yet it reacted to direct light stimulus.

On May 25, 1901: Vision of the right eye was $^5/_{15}$; the optic papilla no longer swollen; its lower edge still somewhat indistinct.

On May 31, 1901: Vision was $^5/_7$, the eye reads finest print (0.5 at 0.25); visual field free—no central scotoma. With the disappearance of the impairment of vision the optic papilla began to get slightly paler. Now, when the left eye was covered, the right pupil showed only a physiological dilation. Patient went to Kreuznach and then to a sea-bath.

On October 8th, I found $V = {^5/_4}$ in either eye; visual field normal. The outlines of the right optic papilla were again sharply defined; blood-vessels normal, but the whole disc pale.

Thus this interesting case of acute inflammation of the right optic nerve, from the beginning till the end of the month of May, has been through all the stages. The first stage, the increasing impairment of vision, from May 2d to 5th, I did not observe; the second stage, that of blindness without visible ophthalmoscopic changes, lasted about from May 5th to 8th; the third stage, that of blindness with ophthalmoscopically visible optic neuritis, lasted from May 9th to 14th; the fourth stage, that of the disappearance of the visible changes and of the impairment of vision, took up the second half of the month.

The pathological dilatation of the pupil, with immobility under light stimulus, covers about the second and third stages, in which there is total blindness. Yet, even a few days before vision begins to return, the pupil again contracts under light, and thus furnishes the most important factor at first for the diagnosis and towards the end for the prognosis of the case.

In spite of the severity and duration of the blindness, the cure is perfect. But the optic papilla remains permanently pale, although its function is totally restored, which is probably due to alterations in the connective tissue. The remedies used were not unindicated, but the healing must probably be considered as spontaneous. The cause of this interesting affection is unknown. Optic nerve affections due to anæmia are usually binocular.

In conclusion one short remark. Although the acute simple postocular optic neuritis ends but extremely rarely in total blindness (in 40 cases in three years I saw it only once), occasionally a considerable loss of vision remains permanent, so that the afflicted eye can count fingers at short range only. In such cases a condition of the pupils is observed which stands midway between the physiological and the pathological dilatation, when the healthy fellow eye is covered. In a woman, 57 years old, in whom by an acute optic neuritis in May, 1900, the vision of the left eye had been reduced to light perception, with abolition of direct pupillary reaction, vision of the diseased eye was very poor on October 21, 1901—smaller than $^1/_{60}$; the visual field fair, contracted down and inwards, and with a central scotoma; the papilla perfectly pale. The right eye did not have very fine vision, but was normal. In the dark room and one-half meter distant from the electric light used for ophthalmoscopical examination, the pupil of either eye measured about 4 mm., but the left one was a trace larger than the right. When the right eye was covered the left pupil became dilated to 6 mm. and reacted sluggishly to light; that of the right eye, on the contrary, dilated only to 5 mm. and reacted promptly upon light.

NOTES CONCERNING THE HISTORY OF THE INVENTION OF THE OPHTHALMOSCOPE.*

By RICHARD GREEF, M.D.,
BERLIN, GERMANY.

Translated by Adolf Alt, M.D.

I THINK it very beautiful and timely that our society will devote this evening to the invention of the ophthalmoscope. Day before yesterday it was exactly fifty years since for the first time Helmholtz demonstrated this instrument at Koenigsberg. It would not be in place here for me to talk of the importance of the ophthalmoscope. I should not like to repeat what is printed in every text-book and what you all know. It is enough to say that every student, before he begins to penetrate into our science, must learn how to use the ophthalmoscope. Without ophthalmoscope there is no scientific ophthalmology and there was none. The great realm of the black cataract, which comprised all that concerned the interior of the eyeball, and in which, as a humorous colleague once said, neither patient nor doctor saw anything, after the invention of the ophthalmoscope was divisioned off in a wealth of characteristic forms of disease. Von Graefe's word, "Helmholtz has given us a new world," did not go any too far. The importance of this invention reaches far beyond ophthalmology. All other medical mirrors are fashioned after the principle of Helmholtz. The examination of the fundus of the eye is, furthermore, important not for the eye only, but often decisive in the diagnosis of general affections. The only place where we can see a piece of brain in the living lies here in the optic papilla; also, the only place where we can inspect the vascular system and observe the quantity and quality of the blood and the pulsation. There are few internal diseases in which the morbid process is not in some way mirrored in the fine details of the fundus of the eye. He only who does not know the ophthalmoscope sufficiently might oppose the fact that internal clinicians consider in their clinics the ophthalmoscope of equal importance with the stethoscope and the percussion hammer.

---

*Paper read Nov. 14, 1901, Society of Physicians of the Charité. Berliner Kl. Wochenschr., Dec. 2, 1901.

The fiftieth anniversary of the ophthalmoscope in this year was first noticed in America, and at the Pan-American Exhibition at Buffalo an exhibition of ophthalmoscopes was shown, at which it is said there were about 200 ophthalmoscopes from America. In August of this year Prof. Uhthoff mentioned this anniversary at the meeting of the German Ophthalmological Society at Heidelberg. He, further, tried to find out something about the manner in which this invention took place, and searched in Koenigsberg after old documents and models of Helmholtz—unfortunately nearly in vain. He says: "I have had to learn how difficult after fifty years it already is to find out smaller details concerning even as important and far-reaching an invention as this one."

It is not even fully ascertained when Helmholtz's paper, "Description of an Ophthalmoscope for the Examination of the Living Eye," was published. It must have been in the last quarter of 1851.

At the meeting at Koenigsberg of the Society for Scientific Medicine Helmholtz first demonstrated his mirror, on November 11, 1851. This is thus entered on the minutes by Dr. Wohlgemuth: "Mr. von Helmholtz read an interesting paper on his ophthalmoscope. He showed the instrument and explained its application, whereupon the society adjourned and the members joined in a social talk."

Neither instruments nor models of von Helmholtz could be found in Koenigsberg.

Accidently, however, I have succeeded after all during my researches to find some traces. While hunting for this, my assistant, Dr. von Hasselberg, found in a French journal a copy of a letter of von Helmholtz which is of the greatest interest. Via Madrid and Paris, through the kindness of Dr.

Landolt, I have received a copy of this letter by the hand of Mrs. von Siemens, von Helmholtz's daughter. In our literature the letter is certainly not published and not known. It is dated on December 17, 1850, and addressed by von Helmholtz to his father at Potsdam. In it I find:

"Dec. 17, 1850.

* * * "Concerning the measurements of time, I have so far no new results, but spent my time with the construction of other apparatus and the necessary preliminary work. Aside from this, occasioned by my lectures on the physiology of the special sense organs, I have made an invention which may be of the most important use for ophthalmology. It really lay so close at hand and necessitated no further knowledge than what I had learned of optics at the gymnasium, so that it seems ridiculous to me how others and myself could be so dull as not to find it. It is a combination of glasses by means of which it is possible to illuminate the dark background of the eye through the pupil without making use of a dazzling light, and to see all the details of the retina clearly, more clearly even than we can see the external parts of the eye without magnifying lens, since the refracting media of the eye act like a lens, with a twenty-fold magnifying power for the retina. You can see the blood-vessels in the prettiest manner, the divisions of the arteries and veins, the entrance of the optic nerve into the eye, and so on. Till now a series of important diseases of the eye were grouped under the head of black cataract, a terra incognita, since the changes were not seen during life, and often not after death. By my new invention the most minute examination of the interior of the eye is made possible. Being a regular egg of Columbus, I had it at once proclaimed as my own in the Physical Society of Berlin; I have at present ordered such an instrument to be made which will be better and handier than my own, made of pasteboard; I shall, if possible, make examinations of patients with our chief oculist here, and shall then publish it."

I cannot share the opinion of Helmholtz that but the knowledge in physics taught at the gynasium was sufficient to invent the ophthalmoscope. Certain it is that many who knew a great deal more tried in vain. This was probably not simply an expression prompted by modesty; no, as is often the case, the genius was not conscious of his own titanic powers. What he can do easily, he thinks is easy.

In this letter we have a new trace which takes us to Berlin into the Physical Society in 1850. How thoroughly it had been forgotten that a manuscript by von Helmholtz had been presented and read here is seen from the fact that Uhthoff and the lately deceased Professor Arthur Koenig searched everywhere for traces without thinking of the Physical Society. * * * *

* * * * To my question A. Koenig answered: "In the minute-book of the Physical Society I find concerning the meeting of December 6, 1850: Name of lecturer: E. Du Bois-Reymond; subject of the paper: Communication of Helmholtz on 'The Shining of the Eyes.'

"Both entries are by Du Bois-Reymond's hand. It seems, therefore, that Helmholtz sent him a short manuscript from Koenigsberg, which he read to the society. The transactions were then not published. It is now impossible to find out what became of this manuscript. The secretary, Beetz, states that four papers were read that evening, and that the following were present: Du Bois-Reymond, Roth, Cohn, Koenig, Grossman, Wiedemann, Jungk, Splittberger, Langguth, Koerte, Werther, Fick, Heintz, Beetz, Brix, Barth and Gericke."

We have, then, succeeded in tracing the history of the ophthalmoscope a little further back than previously known. The invention was made in 1850 and the first publication was made on December 6, 1850, at Berlin before the Physical Society.

Von Helmholtz himself wrote twice about the ophthalmoscope. First, in 1851, the monograph; "Description of an Eye-Mirror for the Examination of the Living Eye." Second, in 1852, in *Vierordt's Archives:* "On a New, Simple Form of the Ophthalmoscope."

He furthermore spoke about the manner in which he invented it, when at the meeting on August 9, 1886, at Heidelberg he was presented by the German Ophthalmological Society with the Graefe medal. (Cf. Supplement to the *Klin. Monatsbl. f. Augenhlk.*, XXIV., 1886).

He again discoursed about it at the celebration of his 70th birthday, on November 2, 1891. (Speeches made at the celebration in honor of H. von Helmholtz, Berlin, 1892. Hirschwald). I should like to cite from his speech the following important words: "I at once went at it, and pasted the instrument together of trial lenses and microscopical cover glasses. At first it was difficult to use. *Without the certain theoretical conviction that it must work I should, perhaps, have left it alone. After a week, however, I had the great pleasure to be the first to see clearly before him a living retina.*"

Shortly before his death, during his trip through America (1893) he spoke once more concerning the invention of the ophthalmoscope at Professor Knapp's clinic. According to the report he said: "The new which I could claim was the solution of the question of how the optical images of the fundus could be made visible. All of my predecessors had stopped midway. As soon as I had solved this problem, the making of the ophthalmoscope was easy, and it needed but two days in order to experiment with it successfully."

[Here follows the demonstration of a collection of ophthalmoscopes. The paper ends with the following remarks]:

The historical sequence of the ophthalmoscopes here shown begins naturally with von Helmholtz's models. These are the well-known three-sided boxes with a right-angle three-cornered base, and with, as hypothenuse, three plano-parallel plates of glass which reflect the light under an angle of 56° into the eye to be examined. The light is thus polarized.

The oldest models of von Helmholtz and his immediate successors did not remain in use long, as it was soon found that, in place of the glass plates of von Helmholtz, a mirror with a central perforation was much more useful. There have been about 100 successors to von Helmholtz's ophthalmoscope. Even to-day new inventions are being made in this field.

MEDICAL SOCIETIES.

PROCEEDINGS OF THE OPHTHALMOLOGICAL SOCIETY OF THE UNITED KINGDOM.*

DAVID LITTLE, M.D., F.R.C.S.E., President, in the Chair.

CLINICAL EVENING.

Thursday, December 12th, 1901.

NEW GROWTH OF ORBIT.

MR. H. WORK DODD showed a peculiar new growth in the orbit. The patient was a woman, aged 39, who was seen in October, 1901, with the history that eleven years ago she had a small growth of the upper lid which in four years had attained the size of a pea. This was then removed. Two years later a lump appeared, and this broke down and healed several times, and had attained the size of a filbert, being situated at the outer side of the orbit. It was adherent to the bone. The eye was pushed to the nasal side, and there was an enlarged gland in front of the ear. The whole contents of the orbit were removed, and the bone to which they were adherent was scraped. The lacrymal gland was normal. The pathologists' report stated that it was an unusual form of carcinoma allied to rodent ulcer. As much difference of opinion was expressed on the sections, the growth was referred to a pathological committee.

CASES.

MR. HENRY JULER showed the following cases: (1) A congenital case of retinal pigmentation situated towards the periphery of the fundus. (2) Peculiar macular changes due to choroido-retinitis. (3) A case of congenital aniridia. In this latter case the mother and daughter were affected. The mother came to Mr. Juler stating that the sight had always been defective, and when seen one eye was quite blind from glaucoma. After removal, it was found on dissection that there was a ring of iris at the extreme periphery which had caused blocking of the angle. The lens was partially opaque. The daughter had come under the care of Mr. R. D. Batten also suffering from glaucoma, and for this he had been induced to do sclerotomy, but it was not successful. He thought it was contrary to what one would expect that an eye without an iris should have glaucoma.

---

*British Medical Journal.

Mr. Devereux Marshall stated that he had seen several cases of this sort, and he never remembered seeing one who did not have glaucoma. This was due to the fact that the stump of iris which was always found present was sufficient to block the angle, and this narrow ring was quite sufficient to produce the disease.

Mr. Treacher Collins had examined several cases, and had shown that they were specially liable to chronic glaucoma.

Mr. Treacher Collins showed a child with congenital thickenings of the conjunctiva, opacities of the cornea, and a notch in the left lower lid in the vicinity of the outer canthus.

Mr. G. Brookshank James showed three cases of infantile tabes due to congenital syphilis. They were all members of the same family, and showed Argyll-Robertson pupils and other symptoms of tabes. There was, however, no atrophy of the discs, and the fields were normal. He also showed a case of occlusion of the four lacrymal puncta, probably congenital. There was epiphora with dacryocistitis, and for this he had opened one of the occluded lower puncta.

Mr. J. B. Lawford showed an unusual case of choroidoretinitis in a subject of hereditary syphilis.

Mr. G. W. Roll showed a case of localized fundus changes, probably of traumatic origin. The eye was injured in May last by being struck with a piece of iron. Two months later definite fundus changes were present. A foreign body was localized in or just in front of the sclerotic. There was seen to be a patch of atrophy close above the macula with pigmentary changes around it. He thought the foreign body, which was 3 mm. long, had entered through the cornea, iris, and suspensory ligament, as the lens was clear.

Mr. Ormond mentioned a similar case he had had in which after ten days no wound was visible, although it was easily seen immediately after the injury.

Mr. Doyne said there was a black mark at the back of the lens which possibly was a scar.

Mr. Lang mentioned a similar case he had watched for two years without deterioration of vision, and in the present case, as everything was quiet, he should be inclined to leave it alone.

Mr. J. H. Fisher showed a case of Mooren's ulcer of the cornea.

Mr. L. V. Cargill showed a woman, aged 22, whose sight had been gradually failing for about a year. The family history was good. Two years ago she suffered much from headache, and when first seen she was very anemic, but an examination of the blood and urine showed nothing abnormal. The vision was $^6/_{60}$ and J. 14. The changes consisted of numerous greyish yellow spots in the choroid. There were no vitreous opacities and the vessels of the fundus showed nothing but perhaps slight dilatation.

Mr. N. Bishop Harman showed a patient with a badly developed eye with ciliary processes adherent to the anterior surface of a shrunken cataractous lens. This was congenital.

Mr. Fisher said that about three years ago he had seen an almost identical case.

Mr. Harman also showed a simple and efficient portable refractometer.

At the meeting of the Section of Ophthalmology, College of Physicians of Philadelphia, December 17, 1901, Dr. C. A. Veasey reported a case of cystadenoma of the lacrymal caruncle which was seen in a female aged 57 years. The growth was about the size of a pin's head, of a bluish-red color, and was situated in the right lacrymal caruncle. It lay beneath the surface, the caruncular tissue overlying it being translucent, was slightly ovoid in shape, and presented the external appearance of a minute angioma. It was removed under cocain anesthesia, and microscopic examination showed it to be a cystadenoma developed from the tubular glands in the caruncle.

ABSTRACTS FROM MEDICAL LITERATURE.

By W. A. SHOEMAKER, M.D.

ST. LOUIS, MO.

EPICANTHUS.

Foggin (*Ophthalmic Review*, January) reviews the literature of the subject and discusses the measures adopted for its relief.

"While doing Sichel's operation, five years ago, it occurred to him to pass the sutures, and tie them tightly to harelip pins, one on each side, thus pinching up a fold of skin upon the bridge of a flat nose. The result of the operation of this kind, which he then performed, was neat in appearance. It seemed questionable if such an appearance could be maintained, as the eminence of tissue was lacking. Accordingly he passed a Graefe knife subcutaneously on each side of the nose, detached the tissues as freely as possible from the nose-bridge and somewhat beyond the extent of the pinched-up fold on either side, passing sutures through and tieing them with the requisite degree of tightness to a short piece of leaden style on each side. The result of the first operation was not favorable, the swelling and pain being more than the seven years old patient could endure. Three years later the author did the same kind of an operation, with the single difference that the style was replaced by a flat piece of lead shaped to each side of the nose, about an inch and a quarter long, tapering from five-eighths to half an inch in width, the plates being a trifle more than one-eighth of an inch in thickness. These were kept *in situ* for a fortnight, the pain and swelling being somewhat severe for four days—then gradually subsiding. The result was gratifying. The epicanthus disappeared; in place of the flat bridge, there was a more natural contour of the nose, and the central unsightly scar of the ordinary operation was, of course, avoided. There have lately been reported some cases of bone grafting, in one of which a portion of the patient's own fourth metatarsal bone was used. This has been done, however, chiefly in order to replace a necrosed vomer, where of course the conditions are very different from those obtaining in the class to which attention is drawn in this article."—*Albany Med. Annals.*

DANGERS OF THE USE OF ADRENALIN IN EYE DISEASES.

Henry B. Lemere (*American Medicine*, October 5), in discussing the use of adrenalin in eye diseases, says:

"Its physiologic action is very evidently that of an intense astringent when applied locally to the ocular conjunctiva, 30 seconds after a drop of the 1 to 1,000 solution has been instilled into the conjunctival sac, its vessels are contracted and the eye-ball becomes blanched. This contraction extends to those branches of the long ciliary arteries which anastomose with the conjunctival vessels and supply the more superficial portions of the sclera anteriorly. Bearing this in mind, it is well to recollect the result of astringents on the body surface elsewhere, the well-known action of cold, for instance, causing congestion of the deeper structures, and also the reverse action obtained in relieving deeper congestions by leeching, cupping and blistering.

"The tendency then of the local application of this astringent is to blanch the conjunctiva at the expense of risking the engorging of the deeper anastomosing blood-supply of the iris and ciliary body. With these vessels in their normal condition and the iris or cornea unaffected this danger is practically nil. But with a tendency to iritis, and especially such tendency as accompanies keratitis and corneal ulcer, the danger is very real.

"Three such cases have recently come to my notice. One in which a superficial corneal ulcer was, after the instillation of adrenalin chlorid solution 1 to 1,000, complicated with adhesive iritis. The other two were cases of iritis progressing favorably when acute exacerabations together with adhesions immediately followed the use of this drug.

"Besides the danger of the use of adrenalin in these deeper inflammations, I would call attention to the fact that in superficial inflammations in which it is used the additional use of some simple wash as boric acid or sodium borate solution will greatly enhance its benefits."

MODIFIED OPEN WOUND TREATMENT.

Heiman *(Münchener Med. Woch.)* discusses the use and advantages of a protective apparatus, after operation on the eyeball, instead of the usual snug-fitting bandage. With his apparatus the eye is allowed to remain open, the lids opening and closing as in the normal condition. Against the bandage, as ordinarily used, he offers the following:

1. The bandage is easily movable, and in an improper position exerts a harmful pressure upon the eyeball.
2. The bandage gives rise to an increase of micro-organisms always present in the conjunctival cul-de-sac by means of a stagnation of the secretion and increase of temperature.
3. The physiological action of the lid, which does away with the secretion and bacteria so excellently, is impeded.
4. The bandage, particularly when tightly applied, exerts a pressure upon the sclera, and gives rise to a gaping of the wound.
5. The psychical influence of the bandage, especially if binocular, and the inconvenience in summer, or in a heated room, are so well known as to scarcely require mention.

The advantages of a protective apparatus in this modified open-wound treatment are:

1. Protection of the eye from mechanical injuries.
2. Facilitates the removal of the bacteria from the conjunctival sac by permitting opening and closing of the lids.
3. More rapid decrease in the irritability of the operated eye in consequence of the prevention of stagnation.
4. A better coaptation of the wound margins and a decrease of the annoying operative astigmatism.
5. A decrease in the annoyance to the patient.
6. Decrease in the possibility of a psychical disturbance.
7. An easier and more convenient control in subsequent treatment.

TOTAL RETROFLEXION OF THE IRIS.

A. A. Hubbell *(Boston Medical and Surgical Journal*, Nov. 14, 1901) reports the case of a man aged 55, who, two months before coming under observation, had fallen from a wagon and struck the left side of his head and face against the pavement. When first seen by the author the left eyelids were ecchymotic, the cornea somewhat hazy, and the aqueous chamber filled with blood. After the blood had been absorbed the lens was found to be absorbed or dislocated to a point when it could not be found. The former supposition is the one accepted. The iris was thrown entirely out of view; evidently by being reflected against the ciliary body. The mechanism of retroflexion probably consisted (1) In removing the posterior support of the iris by completely rupturing the zonula of Zinn; (2) in rupturing the pupillary margin of the iris, probably at several points, allowing this membrane to be pushed against the ciliary body; (3) the effusion of blood resulting from the lacerations of the iris, filled the space between it and the cornea, and thus held it firmly in its new position until it became so fixed that it could not replace itself.

A CASE OF OSTEOMA OF THE ORBITAL PLATE OF THE FRONTAL BONE, BRAIN ABSCESS, AND THROMBOSIS OF THE CAVERNOUS SINUS.

J. W. Charles and M. B. Clopton *(Interstate Med. Journal*, November) reports the following case: L. K., aged 23, presented himself for the relief of an intense frontal headache and sore left eye of twenty-four hours duration. Status præsens, O.D., normal O.S., vision, fingers at 20 feet; lids odematous and tense; conjunctiva chemotic; globe almost immobile; retinal veins dilated and slightly tortuous, and severe pain in eye and forehead; temp. 100.2°; pulse 80. From the time of admission to the hospital until death, five days later, the temp. ranged from 100.2° to 107.6° (with morning remissions and evening exacerbations), increasing daily, the high point being reached a few hours before death. On the second day after admission the patient had an epileptiform convulsion lasting ten minutes.

Autopsy.—"Beneath the dura, over both parietal regions, was a tenacious fibrous exudate, which also extended over the left frontal lobe. The right side of the base and the posterior half of the left side were free from exudate. The base on the left frontal lobe and the adjacent fissures were covered with a fibro-purulent discharge, and the frontal lobe was the seat of an abscess about the size of a walnut. The contents of the abscess were purulent and bloody, and were contained by a grayish-black membrane, which merged into the much injected brain tissue that surrounded it. The abscess did not connect with the subdural space, but was separated from it by 1 cm. at its nearest approach. At the corresponding point on the orbital plate of the frontal bone protruded a smooth nodular exostosis, 1.5 cm. in height and 2 cm. in diameter at its base. This pressed into the frontal lobe directly beneath the abscess, and was covered with a fibrous bloody exudate. The orbital plate, when chiseled loose, opened into an empyema of the frontal cells, the osteoma presenting almost as much on the under surface of the orbital plate as it had above.

"The left cavernous sinus was thrombosed for its entire course. Cover-slips from the meningeal exudate showed no organisms. Cultures were not made. Sections of the exostosis showed a simple osteoma."

IRIDECTOMY IN GLAUCOMA.

The following is part of a letter received from Dr. George J. Bull of Paris: "During the debate before the French Congress of Ophthalmology, in May, on De Wecker's report on the value of iridectomy in glaucoma, Dr. Emile Javal, now totally blind in both eyes from glaucoma, was lead into the room by a servant and took one of the front seats. One speaker after another expressed his opinion on the subject, only to show that little is known with certainty, and that we have to do with a disease which is far from being properly understood. At length Javal was called on to speak, and not rising, as did the other speakers, he turned in his chair towards the centre of the room and began his remarks in a low tone. The men in the farther parts of the room stood up and came nearer, the better to see Javal and to hear him, and presently all were standing except the speaker and those in the few seats around him. It was a dramatic scene, not to be forgotten; the sightless speaker, eyes covered with dark-blue spectacles, his neck scarred from an operation to excise the sympathetic ganglion, a wounded soldier, indeed, and the older men in the group around him, with the younger men beyond, bending forward the better to hear the soldier's story. From time to time Javal ceased to speak, but no one broke the silence, for it was seen that he was reading with his fingers the notes he held on the table.

"And yet no one has brought us the solution of the problem."—*Ophthalmic Record.*

CONGENITAL CONDITION SIMULATING CHOKED DISC.

C. H. Beard (*Ophthalmic Record*, June, 1901) reports an interesting and comparatively rare case in which the optic nerve entrance in both eyes was entirely hidden by a swelling of fully eight diopters; the retinal vessels were somewhat smaller than usual, but retained their comparative size. (In choked disc the arteries are always small and the veins dilated.) No evidence of brain disease or other cause of optic neuritis could be found. The patient has remained under observation for seven years, is in good health, has suffered no deterioration of vision and no ophthalmoscopic changes have been noticed.

THE PRESENT POSITION OF OPHTHALMIC SCIENCE AND ART.

D. B. St. John Roosa (*Medical Record*, Nov. 16, 1901) has gone carefully into the history of the development of ophthalmic science, showing how it has grown from a crude beginning to one of the most exact departments of the therapeutic art. The author believes a good advance has been made in the treatment of myopia of high degrees, by the invention of the method of reducing the refraction of the eye by the removal of the lens. He discusses the operative measures employed in senile cataract, the various operations of iridectomy, the use of the magnet in the removal of foreign bodies from the eye, the treatment of acute glaucoma, detachment of the retina and strabimus.

ANISOMETROPIA.

Alexander Duane (*Archives of Ophthalmology*, November, 1901) draws the following conclusions:

1. In the large majority of cases of anisometropia, even those in which the difference in refraction exceeds 2 D., the full correction can be applied with success, provided the patient is warned that it may take him one or two weeks to get accustomed to the glasses, and that during this period he must use them steadily.

2. In many instances temporary discomfort is produced by the glasses, but in the majority of such cases the discomfort soon disappears, if the glasses are steadily worn. The period of time that it takes a patient to get used to the glasses so that they no longer give discomfort, varies from a few hours to one or it may be two weeks.

3. After the patient has become accustomed to the glasses they are not only worn with ease and satisfaction, but also often relieve important symptoms, which glasses not compensating the anisometropia do not relieve.

4. It is especially important to apply the correction when there is a beginning squint which is evidently due to the anisometropia. Yet it is in these very cases that we may expect difficulty in the acceptance of the glasses.

5. The causes of temporary or permanent discomfort in using glasses are: (*a*) either the strength of the glasses *per se;* (*b*) the unequal prismatic action of the unequally strong glasses; this gives rise either to diplopia and confused sight, or to muscular asthenopia due to efforts made in overcoming the prism; (*c*) the presence of a muscular deviation producing diplopia. The glasses in this case, by enhancing the distinctness of the double images, force them more upon the patient's attention, so that they are more difficult to ignore, and hence give more trouble than when seen without the glasses. This I believe to be one of the most frequent causes of a permanent difficulty in using the glasses.

6. The statement that glasses correcting the anisometropia cause trouble by producing retinal images that are of a different size in the right eye and in the left is probably fallacious, trouble not being caused in this way.

7. In anisometropia there is a moderate tendency for the right eye to be the more refractive of the two. In my cases, the right eye was the more refractive in 58 per cent., and, counting only the cases of high anisometropia, was the more refractive in 64 per cent.

8. In anisometropia the proportion of cases in which the right eye is the more ametropic about equals those in which the left eye is the more ametropic.

9. Anisometropia is very frequently conjoined with muscular anomalies, and particularly (in 41 per cent. of my cases) with divergence (exophoria or divergent squint). The divergence may be due either to a convergence insufficiency, or to a divergence excess, the latter condition being comparatively common. In the cases that I examined, convergent deviations were less than half as frequent as the divergent.

10. In anisometropia of low degree there is no special tendency to the development of hyperphoria. In high anisometropia hyperphoria is unduly frequent (occurring twice as often as in low anisometropia).

11. The proportion of cases with squint (especially divergent squint) is high, convergent squint being found in 11 per cent., and divergent squint in 14 per cent. of my cases.

DESCEMETITIS A SYMPTOM OF INFLAMMATION OF ANY PORTION OF THE UVEA; SEROUS IRITIS NOT A DISEASE PER SE.

Henry D. Bruns (*Arch. of Oph.*, Nov., 1901) denies the existence of descemetitis as a special condition, reports cases and reviews the literature of the subject. His conclusions are:

1. That there cannot be any such disease as serous iritis; it is equally impossible to conceive of a serous cyclitis or choroiditis. "Simple" cyclitis would seem to be a term of evasion.

2. Descemititis, on which the diagnosis of serous iritis was long made to rest, is a symptom sometimes appearing as an accompaniment of a focus of acute inflammation in the iris, ciliary body or choroid.

3. It may also appear in cases of uveal disease so slight

and evanescent that we are unable to determine the location of the focus, and here the term incipient uveitis more correctly indicates the diagnosis.

4. Descemetitis appears also in certain cases of subacute or chronic uveitis, when the focus cannot be determined, but an inability to find it does not justify the diagnosis of simple subacute or chronic cyclitis.

5. Further observation will probably show it to be frequently the principal symptom of an acute plastic choroiditis, which has been overlooked because too few cases of iritis or cyclitis are subjected to careful ophthalmoscopic examination after recovery and the complete disappearance of the vitreous opacities.

6. Many cases not to be clinically distinguished from such acute plastic choroiditis show to the ophthalmoscope, after clearing of the vitreous, no evidence of a lesion in the choroid. In this it is reasonable to suppose that the choroidal focus was so peripheral as to be out of the field of observation.

7. Plastic choroiditis often appears under the clinical picture of the so-called serous iritis, but such cases usually are observed after a stage of circum corneal injection and descemetitis has passed away.

A CASE OF ENDOTHELIOMA OF THE LACRYMAL GLAND, WITH AN ANALYSIS OF PREVIOUSLY REPORTED CASES OF LACRYMAL GLAND TUMORS.

Aldred S. Warthin *(Arch. of Oph.*, Nov., 1901) sums up his conclusions in the following:

1. The great majority of the lacrymal gland tumors described in literature, under widely different heads, are most probably mixed tumors of endothelial origin, similar in structure to those of the parotid and submaxillary glands. These tumors form a type peculiar to the serous glands and differ from the endotheliomata found in other parts of the body in their tendency to form cartilage, hyaline and myxomatous tissue, and are of relatively slight malignancy.

2. Histogenetically they arise from the flattened endothelium of the lymph spaces, and hence are called endotheliomatæ; but their peculiar characteristics warrant the em-

ployment of some special designation. The use of the term endotheliomata in itself appears somewhat misleading in view of the fact that endotheliomatæ elsewhere are of the nature of sarcoma and are for the greater part very malignant. This growth partakes more of the nature of mature connective tissue tumors. The designations myxochondroma endotheliale, chondroma endotheliale, etc., might be employed as the case warranted to indicate both histogenesis and structural characteristics of the growth in the absence of any specific term for the cells lining the tissue spaces or the tumors derived from them."

THE COSMETIC AND VISUAL RESULTS IN SQUINT.

J. M. Ray *(Am. Jour. Med. Asso.*, Nov. 2, 1901) concludes his paper with the following observations:

1. The effect gained in the treatment of strabismus, whether parallelism of the visual axes be obtained by a cycloplegic, glasses, orthoptic exercise, or an operation, is largely, or we might say, wholly cosmetic.

2. Glasses should be adjusted to the eyes of squinting children at as early an age as possible, depending upon the ability of the parent to control the child; and they should always be worn for a sufficient length of time to determine their effect upon convergence, before any steps in the way of an operation are undertaken.

3. The use of the exclusion-pad and orthoptic training are advisable, not so much in the hope of increasing the vision in the squinting eye, as to improve the power of co-ordination in the recti muscles, so that when the child reaches the proper age for operation the power of simultaneous muscle action will not have been lost.

4. Binocular single vision is not present in more than 7 per cent. of the cases of squint, and its production in a larger percentage uncertain and unsatisfactory. Parallelism of the visual lines does not mean binocular vision.

5. Double images are not necessary for a successful issue. Cosmetic results can be obtained and maintained where the fusion power is absent. This is true in monocular squint with great amblyopia as well as the alternating form.

6. Congenital amblyopia is often found in eyes that do not squint, especially combined with hypermetropia and astigmatism, and often in members of a family where squint in others is present.

7. In alternating squint if the hypermetropia is of a high degree the chances for producing parallelism are better than when the hypermetropia is low. In alternating squint with hypermetropia of a medium degree the necessity for an operation and the difficulties of producing parallelism by tenotomy are greater than in monolateral squint.

8. The effect of tenotomy is greatly influenced by the amount of abducting power present in the corresponding externus. This should always be especially noted in the alternating variety.

9. Two tenotomies on the same internus is bad surgery, since it invariably leaves a sunken caruncle and later divergence.

10. From a cosmetic standpoint the correction by operation is not as simple as might be supposed. What is gained by straightening the eye is lost if there is left a noticeable exophthalmos with limited motion of the eye both outward and inward.

PAMPHLETS RECEIVED.

"A Case of Methyl-Alcohol Amaurosis, the Pathway of the Poison Being the Lungs and the Cutaneous Surface," by G. E. de Schweinitz, M.D.

"Rupture of the Sphincter of the Iris and V-Shaped Rupture of the Choroid on the Nasal Side from Contusion of the Eyeball," by G. E. de Schweinitz, M.D.

THE AMERICAN JOURNAL

OF

OPHTHALMOLOGY.

VOL. XIX. FEBRUARY, 1902. No. 2.

ORIGINAL ARTICLES.

VISUAL TESTS FOR CHILDREN.

BY ARTHUR E. EWING, M.D.,

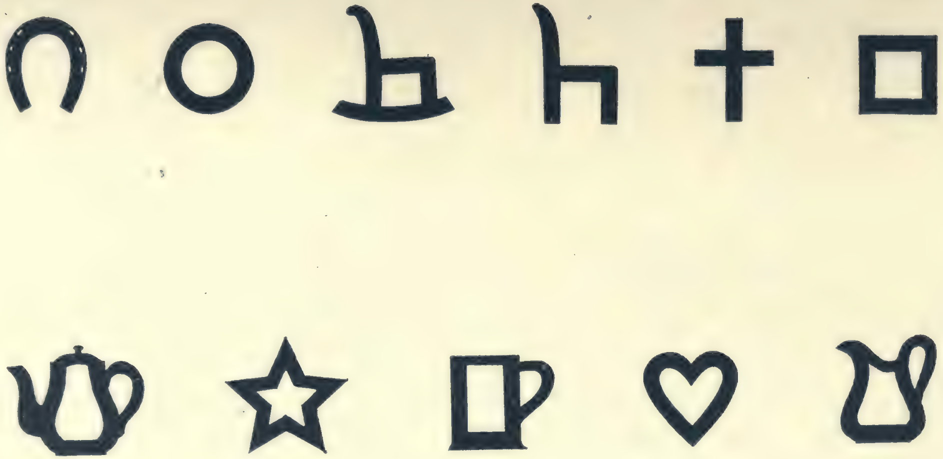
ST. LOUIS, MO.

SINCE 1864, when Donders announced his epoch-making discovery of the leading part which hypermetropia plays in the etiology of convergent strabismus, the indication for the correction of the refraction in this affection has been generally conceded, and convex glasses have been prescribed, with more or less of method, either at the beginning, or at some subsequent stage of treatment. The effectiveness of neutralizing convex spectacles given in the incipiency of the affection, in controlling a newly-discovered crossing of the eyes, is becoming more and more widely recognized, and, with the improvement in optometric methods, the conviction that it is practicable to make and maintain a satisfactory correction of the refraction in young children is steadily gaining ground.

Examination by means of the ophthalmoscope by the direct method (erect image), generally under full artificial mydriasis, is ordinarily sufficient for the detection of ametropia, and often also for an approximately correct measurement of its grade. The shadow test affords still better measurements, and, when supplemented by measurements of the cornea by means of the Javal-Schiötz ophthalmometer, may yield results of sufficient accuracy to admit of their provisional adoption in the prescription of glasses. But however valuable may be the measurements obtained by these objective methods, the all-important questions of the acceptance of the glasses in distant vision, and of the visual acuteness both with and without glasses, remain to be answered. To this end we employ direct visual tests, by means of Snellen's test-letters, and of cards printed with radiating lines, etc., whenever the age and the general intelligence of the patient are such as to admit of their use.

In the case of many illiterates, and especially of young children, subjective tests based on the recognition and naming of letters are inapplicable, and it was to meet this difficulty that in 1885, while serving as assistant to Dr. John Green, I designed a number of special characters, representing objects familiar in every-day life and therefore easily recognized and named. These characters were engraved and printed, in 1886, in conjunction with new combinations of test-letters previously devised and published by Dr. Green. Of this still unpublished collection examples have been given, from time to time, to different colleagues, and have also been in daily use for the past sixteen years in my own work and in that of Drs. Green and M. H. Post, and of others who have been associated with us.

Of the nine characters originally drawn and engraved, six are here shown in the upper row of the accompanying plate. The forms include a horseshoe, a circle, a rocking chair, a chair, a cross and a square. A star, a crescent and a milk-jug or pitcher were included in the same series, but of these the crescent has since been rejected, the star and the pitcher have been drawn anew, and a teapot, a mug, and a heart have been added, as shown in the lower row. The two chairs, the pitcher, the teapot, and the mug are drawn in profile, so that the chairs show but two legs, the tea-pot shows the handle and the spout, and the mug and pitcher their handles. All are drawn approximately to Snellen's scale of 1′ visual angle for the thickness of the line and 5′ for the size of the object, but with variations necessitated by the forms of certain ob-



jects, as the two chairs, the cross and the teapot. The differences in the ease of recognition of the several characters are found to be not much if at all greater than in the case of the standard test-letters of Snellen.

An intelligent child will often name these characters, or at least a sufficient number of them, correctly at first sight, perhaps calling the square a "box," or a "window," or a "picture frame"; the circle a "hoop" or a "ring," etc. In most cases, however, some study of the characters is found to be necessary, and for this purpose we have had them printed singly on small cards, and have given them to the child to look at, and to learn to name them, at home.

The gradations in size and the numbering of the several sizes of the characters are the same as in Dr. Green's "Test-Letters in Geometrical Progression," communicated to the American Ophthalmological Society in 1867 and reported in the Transactions for 1867-68. The ratio, as compared with the next larger size, is $\sqrt{0.5}$ ($=1:0.707$, or practically $1:0.7$), or, as compared with the next smaller size, $\sqrt{2}$ ($=1:1.414$, or practically $1:1.4$), which gives the convenient series: — 5, 7, 10, 14, 20, 28, 40, 56, etc., the successive numerals representing the distances at which the several sizes of characters should be discerned by a person of normal vision.* I have arranged the characters in two different ways, namely, in lines each containing a single letter of each size, as proposed by Dr. Green (Transactions International Ophthalmological Congress, London, 1872), and also (following Snellen) in lines of a single size. Each character in each size is engraved on a separate block of wood or of type metal (Green, 1872), thus admitting of setting them up like ordinary printer's types in any desired sequence, and so varying the arrangement, *ad libitum*, on different cards.

---

*This series in geometrical progression, as proposed by Dr. Green in 1867, is now strongly insisted upon by Javal as the one scientific ratio which should be adopted in all arrangements of test-letters (XIIIe Congrès International de Médecine, Paris, 1900.—Rapports de la Section d'Ophtalmologie).

THE TECHNIQUE OF MUSCLE ADVANCEMENT.

BY DR. EDMUND LANDOLT,
PARIS.

Translation made for the AMERICAN JOURNAL OF OPHTHALMOLOGY *by Dr. Chas. H. Beard, Chicago.*

IN 1889 I communicated to the International Congress of the Medical Sciences at London the results of my researches as to the fields of excursion of the eyes. These show that, in concomitant strabismus, there exists in both eyes a symmetric limitation—temporal in the convergent form, and nasal in the divergent.

Hereby the assertion of the text-books, that concomitant strabismus may be distinguished from paralytic strabismus by the integrity of the ocular excursions, is contradicted; on the other hand, they accord excellently with the theory of Donders that concomitant strabismus is a binocular affection, even though the deviation is never manifest save in one eye at a time.

My experiments demonstrate, corollary to this theory, that the antagonists of the contracted muscles in convergent squint —which is essentially a spastic strabismus—as well as the little used abductors in divergent strabismus, are weakened. Adhering to the theory of Donders, I do not consider these muscular anomalies as being the *cause* of the strabismus, but as being the *consequence*.* This fact should not, therefore, prevent our deductions from having a positive effect upon the surgical treatment of strabismus. Rather are we constrained to direct our attention to *both eyes*, and not alone to that one which habitually deviates. It follows that we should choose, by their advancement, to strengthen the weaker muscles, instead of setting back or weakening the more powerful ones, thus reducing their action upon the globe when this is already none too great.

A study of the two methods of operating has shown me, moreover, another advantage that advancement possesses over muscular recession, viz., augmentation of the arc of excursion in the direction of the advanced muscle without limitation in the opposite sense; in other words, increase of positive amplitude of convergence, without sensible diminution of divergence; consequently no risk of over-correction.

---

*Comp. among others: Landolt, "L'étiologie du strabisme," Archives d'Ophtalmologie, 1887.

I have given elsewhere* the anatomical, physiological and pathological reasons that militate in favor of the advancement as against the setting back.

As far back as 1894, at the International Congress of Ophthalmology at Edinburgh, I advocated most positively muscular advancement to my colleagues there assembled.

Indeed, six years or more previously my statements were not based upon mere theoretic considerations, but upon irrefutable proofs, furnished by a long experience—upon the results of careful measurements as to the influence exerted by the two modes of strabotomy, not only upon the excursions of the eyes, but also upon the amplitude of convergence.

Often since and upon diverse occasions I have endeavored to set forth the advantages of muscle advancement, yet I have said but little concerning the surgical manipulation. This question had seemed to be, in a measure at least, of secondary importance. The object had been, first of all, to emphasize the necessity of abandoning the old method of strabotomy and of adopting the new, which is directly the opposite. The idea was that the discussion of a principle so important should not be trammelled, in the beginning, by minor considerations of method, or too fine distinctions of operative procedure.

It was my desire, moreover, to publish no method that had not been well tried. Thus even in 1881 and in 1894 I would not present my views to my confreres excepting they related to accomplished facts. Now I have evolved at last a method of muscular advancement which has, for a number of years, yielded such good results that I believe I may confidently recommend it. So far am I, however, from deeming it perfect that I would gladly be the first to seek a better still, and I would be pleased to profit by the advice of all those who will lend their co-operation in research along this line.

My method does not, in the main, differ much from that which I described several years since. Meanwhile, however, I have made a few modifications, apparently slight, yet which really are of the greatest value.

---

*Archives d'Ophtalmologie, 1895 and 1897. French Congress of Surgery, 1898. Section of Ophthalmology at Heidelberg, 1899. "The Graduation of the Squint Operation," Archives of Oph., Vol. 26, No. 1, 1897. "Advances in the Surgical Treatment of Strabismus," Jour. of the A. M. A., November, 1899. Norris and Oliver, "System of Diseases of the Eye," Vol. IV., pp. 112-120, 1900.

Apropos, a few words as to the principal instruments that I use for the operation. First my blepharostat. That one whose spring rests upon the nose, to serve in advancement of the externus, and the one whose spring is placed at the temporal side, in advancement of the internus. In case of operation upon the superior or inferior rectus, either the one or the other may be chosen in accordance with the conformation of the patient's face. One peculiar advantage of this speculum is found in the fact that the bar which unites the hooks that hold the free border, lies on the outside of the lid. Attention is called also to the fastening, which is made, not by means of a screw, but by the aid of a simple lever, which the index of the same hand that places the speculum can fix or release, thus rendering its management simple and rapid.

A pair of ordinary fixation forceps without the catch.

A pair of my oblique-jawed forceps, especially useful in operations upon the ocular muscles.

A small tendon hook, somewhat flattened and with a bulbous extremity.

A needle holder with sliding catch, and curved needles, small and fine, and whose points must be absolutely faultless.

No. 1 braided silk, both white and black.

One pair of blunt scissors slightly curved on the flat, and another pair of the crow's beak pattern.

Narcosis may be dispensed with for muscle advancement except in cases of very young children and unmanageable persons. According to the statements of all upon whom I have operated, notably those of a physician among them, the operation is quite supportable with simple instillations of cocain. Subconjunctival injections of this anesthetic are not to be recommended, as their effect upon the tissues is bad.

Having placed the speculum (see Figure 1), I seize a fold of the conjunctiva near the corneal periphery, and with a single snip of the scissors cut the flap, as shown in the figure. Its summit coincides with the border of the cornea, its base is situated just behind the insertion of the muscle to be advanced. The top of the flap is then excised to avoid the unsightly bunch that the conjunctiva would form at the corneal limbus.

By means of the fixation forceps, held in the right hand, I rotate the globe in the direction opposite to the operated muscle, and with the other forceps in the left hand, grasp the tendon near its hither border in such a manner as to form a vertical fold and cut a buttonhole in Tenon's capsule just this side the tendon.

If this buttonhole be well made one sees at its bottom the white, bare sclera. It is only by this means that one may hope to get upon the hook, introduced at this opening, the entire tendon, neatly spread out, as is demanded in a proper advancement. We have long since abandoned the method of von Graefe whereby the tendon hook is placed point upwards beneath the conjunctiva, then turned, the point hugging the globe, pushing it forcibly through Tenon's capsule and thence beneath the tendon. By so doing the muscle is creased and twisted, and not infrequently the point penetrates between the fibres in such a way that what lies upon the hook is so confused that the sutures are wrongly placed, the tendon irregularly cut, and one even risks leaving some of the fibres undivided.

If we are not quite satisfied with the position of the hook, if it be feared, for example, that the buttonhole has not been made sufficiently to one side, we may cut another where the point of the hook emerges at the other side, here insert a second hook, pass it beneath the tendon and *beyond* the first buttonhole to reach any fibres that may have escaped the first hook, whereupon the latter is withdrawn.

The hook is now given to an assistant, who is to hold the tendon lightly without pulling upon the eye.

I next introduce the sutures, from without inwards, through cellular tissue, Tenon's capsule and tendon, one above, the other below, at about one-third the breadth of the tendon.

As to the distance the sutures are to be from the insertion of the tendon, all depends upon the effect one wishes to obtain. If a low degree, the sutures are inserted in front of the hook, not far from the insertion of the tendon, and the latter is then cut flush with the sclera. If, on the contrary, greater effect is desired, the advancement is combined with a resection of the tendon. In this event the sutures are put in *behind* the hook (as in Figure 1) at a greater or lesser distance removed in proportion as the resection is to be much or little.

The threads placed, one blade of the crow's beak scissors is passed under the tendon, in front of the threads, and the tendon is divided straight across. Thus the hook is set free. Next, the stump of the tendon is carefully cut off where it enters the sclera.

Now the four ends of thread are picked up with the left hand and the muscle gently lifted to see that the sutures do not pierce too near the cut end of tendon, that no fibres remain attached to the globe, but that the whole may be easily brought forwards towards the border of the cornea. The points of a pair of closed scissors, which one manages with the right hand, like a muscle hook, are very useful during this maneuvre.

It only remains now to give to the tendon its new attachment. This part of the operation is one of the most delicate. If the muscle with its enveloping tissue—which must always be comprehended in the sutures—offers to the thread sufficient resistance to ensure a permanent hold, then the only danger of a giving-way of the threads is where they are anchored in the globe.

Hence, to make this as firm as possible, I seize the conjunctiva and subjacent episcleral tissue between the jaws of the forceps in the direction *a b* (Figure 1), and introduce the needle here as deep as may be—without, of course, going through the sclerotic—in the episcleral tissue. We cannot succeed in every case with the same facility. In children the conjunctiva is strong enough and the episcleral tissue soft enough to permit a very sharp needle to penetrate, without difficulty, just as deep and as far as desired. In adults, on the other hand, the conjunctiva is much more friable and the scleral tissue harder. The former tears easily, the latter offers a resistance to the needle often embarrassing, for one does not dare push too forcibly for fear of penetrating the interior of the globe.

I avoid this complication in the following manner: If I have the impression of not having gotten solidly into the episclera I pass the needle still further beneath the conjunctiva; and, if this does not inspire sufficient confidence, I conduct the needle, after having brought it out at the point *b*, in a direction perpendicular to *a b*, thus including a second fold of conjunctiva, and giving added strength to the anchorage.

The sutures being thus placed, I flood the muscle and the whole field of operation with tepid, sterile water. Next, the assistant seizes the globe with the fixation forceps, near the cornea, on the opposite side from the operated muscle, and rotates it towards the same, in order that the knots may be tied without causing undue traction either upon the muscle or upon the tissues embraced by the threads.

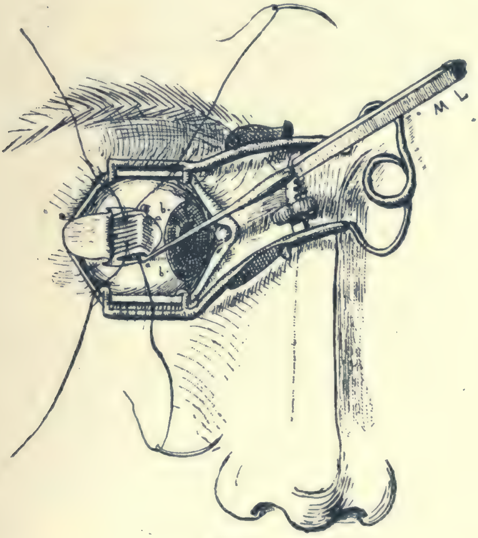


FIG. 1.

It is well to tie first a simple sustaining knot, by passing the thread twice around itself, both above and below. One returns then to the first knot, and draws it up a little more tightly before proceeding to complete the surgeon's knot. Likewise with the second. Lastly, the threads are cut off almost even with the knot to prevent their ends touching the cornea.

We use one white and one black thread the better to distinguish the one from the other.

The operation finished, we inundate the eye again with the sterilized water, and then apply a binocular, aseptic dressing. The dressing should be binocular even though but one eye is operated. Strabotomy upon one eye, does it not influence both eyes?* The free eye, by its movements, and through its accommodation, does it not affect equally its fellow, covered or not?

The occlusion of *both* eyes is calculated to produce that immobility required for healing by first intention, so indispensable in ocular surgery. When the peculiar kind of motility of the eye-ball is considered, turning, as it does, by the actions of muscles deeply situated within the orbit, around a common center, immobility cannot be secured mechanically by means of a compressive dressing. Such a dressing, so far from stopping motion, may even lead to disastrous consequences, especially after operations where the globe is opened. The only means we have of imparting quietude to the eyes—relatively, at least—is, by their simultaneous occlusion, to cut them off from every object of fixation and accommodation, and to keep the patient in general in calmness and at rest. These are conditions essential for obtaining good results. If we close but one eye: if, after the operation, we allow children to be brought in, or permit the patient to receive visitors at house or hospital, we jeopardize the success the operation, no matter how correctly executed.†

The patient should remain quietly in a well-ventilated room. A prudent companion or attendant may be present, and, if desired, there may be music or reading from an entertaining though not exciting book.

Our patients are visited by my assistant morning and evening, and by myself in the middle of the day. The dressings are changed, usually, every twenty-four hours, and the eyes freely bathed with warm sterilized 3 per cent. boric acid solution. In convergent strabismus at the same time a drop of atropin solution is put into each eye.

The sutures are removed on the fifth or sixth day. If it be a case of divergent strabismus the eyes are now left open, for the reason that the acts of convergence and accommodation both tend to produce the result sought by the operation. In convergent squint, however, I prefer to leave the dressing on a day or two longer, and, when they are left off, to replace them at once by convex lenses, which correct the total hyperopia as well as the astigmatism, if these exist. The glasses are medium smoked on account of the mydriasis.

---

*E. Landolt. International Congress of Medicine, Washington. "The Operation for Strabismus is Always a Binocular Operation."

†E. Landolt. Congress Internat. des sc, Med., Paris, 1900. Section d'Ophtalmologie, p. 289.

The judicious employment of cycloplegics and spectacles, when directed by a trained observer, are invaluable adjuncts in the treatment of convergent strabismus. As long as there exists an inclination to excessive convergence, the suppression of the accommodation will prevent the patient from relapsing into the old infirmity. On the other hand, should we fear an over-correction—a very rare occurrence after advancement—the mydriatic is stopped, the convex glasses being retained; at least those correcting the hyperopia and the astigmatism.

If the tendency to divergence persists, it is only necessary to abandon the glasses entirely, when it is surprising how quickly the accommodation brings back the convergence.

The best guide for the normal direction of the eyes and the correction of the strabismus, our truest and most potent ally in every strabotomy, as we have always asserted, *is binocular single vision.* Hence, all our efforts should tend to restore, or establish, that important function on the part of our patients.

I have often spoken of the means we employ toward this end. To revert to them were repetition. It may be permissible, however, in closing this article, to call the attention of our readers to my latest stereoscope, wherein the illumination of one or the other of the images may be varied, thereby equalizing the impression received by the two eyes. It has proven very useful in re-establishing binocular vision.*

---

*E. Landolt. Congres Internat. d'Ophtalmologie, Utrecht, 1899, and Archives d'Ophtalmologie, 1899.

CORRESPONDENCE.

HELMHOLTZ AND OPHTHALMOSCOPY.

BALTIMORE, Jan. 22, 1902.

Editor AMERICAN JOURNAL OF OPHTHALMOLOGY.

Dear Sir:—Dr. S. M. Burnett's interesting paper, "Helmholtz and Ophthalmoscopy," published in the July, 1901, number of your journal, in which he takes exception to portions of my address upon "The Evolution of the Ophthalmoscope and What It Has Done for Medicine,"* has come to my notice only within the past few days; otherwise I should not feel warranted in asking you to give space to this very tardy rejoinder.

The burden of Dr. Burnett's complaint is that I have not done full justice to Helmholtz, and have failed to appreciate "his real position as the discoverer of ophthalmoscopy." That this was far from my intention must be apparent, it seems to me, to any impartial reader of my address, which abounds with much that is laudatory of the great physicist and his genius.

Dr. Burnett criticises, especially, two of my statements, which he quotes in full. The first is this: "As has often happened with important discoveries and inventions, Helmholtz's contrivance of an *Augenspiegel* with which to inspect the interior of the eye * * * seems to have been but the logical outcome of a series of interesting observations made by a number of investigators in the field of physiological optics. But, oddly enough, the problem which these investigators, with the exception of Cumming, were endeavoring to solve, and which Helmholtz himself had in mind, was not the discovery of a means by which the background of the eye could be inspected and pathological changes situated there recognized, but a solution of the question why, under usual conditions, the pupil of the eye appears black and seems to emit no light, while, under certain unusual conditions, it does emit light and assumes a reddish appearance."

---

*New York Medical Journal, June 22, 1901, and Trans. of the Medical and Chirurgical Faculty of Maryland, 1901.

"It would be difficult to find," he says, "a more pronounced instance of complete misconception than is manifest in the foregoing paragraph, in so far as it refers to Helmholtz."

In justification of this rather uncompromising assertion, he declares that the investigators who preceded Helmholtz had gotten no further in the solution of the problem which he ultimately solved than to recognize "that the illumination of the pupil was due to the reflection of light from the bottom of the eye;" that Helmholtz, if he had chosen, might "have gone on and really made an ophthalmoscope to be called by his name," but that he did not do so (!); that "Babbage, Ruete, Rekoss, Jäger, Loring, Liebreich and numberless others" were only "instrument devisers;" that the apparatus of Cumming and Babbage "in so far as they represented a scientific instrument of precision" were nothing more than "the crude material of which they were composed;" that, on the other hand, "what Hemholtz was seeking for was the principle, the law by the application of which the fundus of an eye under illumination could be inspected by another eye;" and that his successful construction of an apparatus to carry out this law is an exact counterpart, as a feat of *a priori* reasoning, to the well-known discovery of the planet Neptune by Adams and Leverrier.

Now, let us see how all this tallies with the well-known facts, and in how far it justifies his criticism of the statements made in the paragraph quoted from my address. In the first place, and this is the gist of the whole matter: What are the facts in regard to Helmholtz's conception of the ophthalmoscope?

His biographer, Dr. John Gray M'Kendrick (and where could we find better authority?), in describing his "invention of the ophthalmoscope," makes this definite statement: "Had he [Helmholtz] done little else in his long lifetime his name would never be forgotten; and yet the invention of this instrument took its origin not in any profound investigation, but in the desire to exhibit a physiological phenomenon to his students."* And in this same connection he quotes these words from an address by Helmholtz, himself: "This instrument [the ophthalmoscope] became the most popular of my scientific achievements; but I have already pointed [out] to the oculists how much good fortune, rather than any personal merit, favored me in the invention. I was endeavoring to explain to my pupils the emission of reflected light from the eye, a discovery made by Brücke. * * * I turned the problem over and over to ascertain the simplest way in which I could demonstrate the phenomenon to my students."† So, after all, the problem which Helmholtz had in mind, and the demonstration of which led to the invention of the ophthalmoscope, was the emission of reflected light from the eye, which is substantially what I stated.

Whether, in view of the statements, of Dr. M'Kendrick and of Helmholtz, just quoted, the comparison made by Dr. Burnett between Leverrier's location of the thitherto unknown planet Neptune and Helmholtz's "contrivance of an *Augenspiegel*," is an altogether happy one, I will leave to others to decide.

Let us next consider what warrant there is for Dr. Burnett's assertions (1) that the investigators who preceded Helmholtz had gotten no farther in the solution of the problem of successful ophthalmoscopy than to recognize that the illumination of the pupil obtained under certain conditions was due to the reflection of light from the bottom of the eye, and (2) that while Cumming, Babbage and the rest were mere "instrument devisers," Helmholtz sought and was the first to discover the underlying principle of ophthalmoscopy, "the law by the application of which the fundus of an eye under illumination could be inspected by another eye."

The first of these statements needs no refutation, since any one at all familiar with the investigations which led up to the invention of the ophthalmoscope cannot fail to see how entirely erroneous, how utterly indefensible it is. Indeed, it would seem that it could have been put forth only hurriedly and without reflection or by one who was entirely ignorant of the work of Rudolphi, of Behr, of Cumming, of von Erlach, of Brücke and of Babbage—that is to say, ignorant of all that had been done between Prevost's observations, in 1810, and those of Helmholtz, in 1851.

---

*Life of H. von Helmholtz, by Dr. J. G. M'Kendrick, p. 71, Longmans, Green & Co., 1899.

†Ibid, p. 73.

It is a prerequisite to a consideration of the second statement that we should decide what the underlying principle of ophthalmoscopy is. To my mind, *the fundamental problem of ophthalmoscopy was the discovery of a means by which the interior of the eye to be observed could be illuminated and at the same time the eye of the observer be brought in line with the emergent rays from the observed eye, without interfering with its illumination.* The question of "how an image is formed by the light returning from the eye,"* the consideration of which led Helmholtz to employ the concave eye-lenses of his ophthalmoscope, and to maintain, erroneously, that with Babbage's ophthalmoscope a clear picture of the retina could not have been obtained because it was not supplied with such lenses, though important, is not, from my point of view, fundamental. If this view be correct, and I think it is not difficult to maintain, then Dr. Burnett's claim that Helmholtz discovered the *principle* of ophthalmoscopy, "the law by the application of which the fundus of an eye under illumination could be inspected by another eye," falls to the ground; for a recognition of the fundamental principle of ophthalmoscopy was involved in the experiments of Cumming, still more so in those of Brücke, especially in the experiment in which he obtained a bright reflex from an eye by looking into it through a tube passed through a candle flame; and, furthermore, the principle was not only recognized but was given a practical application in the ophthalmoscope of Babbage.

The other paragraph which Dr. Burnett quotes from my address, and to which he takes exceptions, is as follows: "And now, having reached its consideration in chronological order, let us turn our attention to the ophthalmoscope of Helmholtz. And what shall we say of it? That it was the legitimate parent of all later ophthalmoscopes; that it was the first instrument with which the back-ground of the living eye was seen distinctly; that Helmholtz was absolutely the first to suggest the indirect* method of ophthalmoscopy; that it was he who directed the world's attention to the subject, are facts which are not open to dispute. But, having willingly accorded him this large measure of credit, I believe I do his memory no injustice in asserting *that what was essential in his ophthalmoscope was not wholly original, and that what was original was not only distinctly not essential, but was the outcome of a misconception—a fortunate misconception, as it turned out—upon his part.*"

---

*Op. cit., p. 73.

I have set forth fully in my address the grounds upon which these views are based, and I shall not tax your space by repeating them here.

Instead, I will close this rather prolix communication by simply asking Dr. Burnett this question: If it was not through a misconception—"because he reasoned that the eye under examination would focus for the image of the nearby flame reflected into it by the glass plates [of his ophthalmoscope], and hence that the light returning from its fundus would leave the cornea in converging rays, which must needs be rendered parallel or divergent in order to afford clear vision to the observing eye"†—that Helmholtz was led to employ *only concave* eye lenses in his ophthalmoscope, what was it that induced him to do so? For it must be borne in mind that it was not only the earlier model of his instrument of which this was true, but that even the later model, to which the Rekoss disks were attached, was furnished with concave lenses only—a series of eight lenses of from 13″ to 6″ focal length. Very truly yours,

SAMUEL THEOBALD.

PAMPHLETS RECEIVED.

"The Principles of Diagnosis of Lesions of the Spinal Cord," by J. Punton, M.D.

"Hay Fever and Asthma: A Permanent Cure by Means of Nasal Surgery," by F. S. Muckey, M.D.

---

*Through a slip of the pen, doubtless, Dr. Burnett makes me say here "*direct*" instead of "*indirect*" method—a statement which I certainly would not have made.

†Extract from my address.

MEDICAL SOCIETIES.

PROVISIONAL PROGRAM OF THE SEVENTH ANNUAL MEETING OF THE WESTERN OPHTHALMOLOGIC AND OTO-LARYNGOLOGIC ASSOCIATION.

To be held at Chicago, Ill., on April 10, 11, and 12, 1902.

1. Address. Pres. C. R. Holmes, Cincinnati, O.

EAR.

Address on Otology.

2. Relations of the Facial Nerve to the Tympanum, especially in Tympanic Exenteration. (Lantern Lecture.) B. Alex. Randall, Philadelphia, Pa. (By invitation.)

3. Symposium: Otorrhœa.
   - *a*. The Neighboring Parts to the Middle Ear and Their Infection. Otto J. Stein, Chicago, Ill.
   - *b*. The Diagnosis of Meningitis, Phlebitis and Cerebral Abscess following Suppuration of the Middle Ear. C. Barck, St. Louis, Mo.
   - *c*. What Eye Symptoms are of Value in the Localization of Brain Diseases? C. Barck, St. Louis, Mo.
   - *d*. When Should One Operate for the Cure of Chronic Suppurative Otitis Media? O. Joachim, New Orleans, La.
   - *e*. Principles of Treatment. Wm. L. Ballenger, Chicago, Ill.

4. A New Field-of-Hearing Chart. Derrick T. Vail, Cincinnati, O.

5. Pneumatic Massage in Aural Practice. Edwin Pynchon, Chicago, Ill.

6. Sources of Error in Functional Tests of the Ear. A. H. Andrews, Chicago, Ill.

7. Thiosinamine and Electrolysis in the Treatment of Tubal Obstruction. Jos. C. Beck, Chicago, Ill.

8. The Lymphatics of the Neck. J. Holinger, Chicago, Ill.

EYE.

Address on Ophthalmology.

9. The Use and Abuse of Spectacles. F. C. Hotz, Chicago, Ill. (By invitation.)

10. Genuine Sympathetic Ophthalmia with Complete Recovery of Both Eyes. Derrick T. Vail, Cincinnati, O.

11. Ex-Section of the Rectus for Paralytic Over-Correction on the Opposing Muscle. A. E. Prince, Springfield, O.

12. The Present State of Our Knowledge Concerning So-Called Partial or Graduated Tenotomies and the Hetrophorias. J. E. Colburn, Chicago, Ill.

13. The Economic Value of Sight. H. V. Würdeman, Milwaukee, Wis.

14. Dislocation of the Lens Into the Vitreous. G. F. Suker, Chicago, Ill.

15. (Subject to be announced) C. D. Wescott, Chicago, Ill.

16. Transient Astigmatism. O. A. Griffin, Ann Arbor, Mich.

17. Therapeutic Measures for Promoting Absorption of Exudates Within the Eye-ball. Randolph Brunson, Hot Springs, Ark.

18. Toxic Amblyopia. D. S. Reynolds, Louisville, Ky.

19. Pallor of Temporal Segment or Papillo-macular Bundle of Optic Nerve Fibres Due to Other Causes than Tobacco and Alcohol. J. O. Stillson, Indianapolis, Ind.

20. Ocular Affections Secondary to Syphilis. Randolph Brunson, Hot Springs, Ark.

21. (Subject to be announced.) J. G. Huizinga, Grand Rapids, Mich.

22. Epithelial Intra-ocular Tumors. A. Alt, St. Louis, Mo.

NOSE AND THROAT.

23. The Significance of Aphonia in the Diagnosis of Aneurism of the Arch. Wm. Porter, St. Louis, Mo.

24. The Best Means of Removing Turbinal Obstructions. J. W. Murphy, Cincinnati, O.

25. The Hypertrophied Faucial Tonsil: With a Report of the Morbid Histology of the So-Called Submerged Tonsil.

E. O. Sisson, Keokuk, Ia. Discussion: H. W. Loeb, St. Louis, Mo.

26. (Subject to be announced.) N. H. Pierce, Chicago, Ill.

27. Paralysis of the Vocal Cords in Acute and Contagious Diseases. T. V. Fitzpatrick, Cincinnati, O.

28. Hay Fever; Present Status, Pathology, Complications and Treatment. J. S. Mott, Kansas City, Mo.

29. Post Operative Management of Intra-nasal Surgery. M. A. Goldstein, St. Louis, Mo.

30. (Subject to be announced.) J. A. Stucky, Lexington, Ky.

31. (Subject to be announced.) C. R. Holmes, Cincinnati, O.

BRITISH MEDICAL ASSOCIATION—SECTION OF OPHTHALMOLOGY.*

THE VARIETIES AND TREATMENT OF "AFTER-CATARACT."

By F. RICHARDSON CROSS, F.R.C.S.,

Surgeon, Bristol Eye Hospital; Consulting Ophthalmic Surgeon,
Bristol Royal Infirmary.

After the extraction of a lenticular cataract there will always remain some fragments of altered lens or capsule as a record of the operation.

The pupil may be black and clear, and the sight, with the help of the correcting spectacles, practically perfect; or, on the other hand, the pupil may be occupied by a thick membrane which obstructs the sight to such an extent that the patient appears to have gained nothing by the removal of his lens.

The amount of the obstruction and the degree to which it interferes with the power of vision show wide varieties in different cases. Such opacities, films, membranes, and other complications as result from the removal of the lens, are best designated by the name "*Nachstaar*," or "after-cataract."

---

*British Medical Journal.

The lens is developed from the invagination of the ectoderm, which constitutes the closed embryonic lens sac.

The epithelial cells which line the sac posteriorly rapidly enlarge and develop to form the lens fibres, which grow forward into the cavity of the sac until they practically fill it up and spread out in layers behind the anterior wall.

The anterior layer of the primary lens sac takes little or no part in the production of the lens fibres; it persists throughout life as a continuous row of polygonal cells, which is known as the subcapsular epithelium.

The subcapsular epithelial layer and the transitional cells near the equator of the lens have, no doubt, an important part in the development and organization of the films and opacities which constitute after-cataract.

After-cataracts present many varieties. They may be characterized as "simple" if only the lens *debris* and the capsule are implicated. They may be "complicated" by entanglement with some of the important structures around—the cornea, the iris, the ciliary body, or the vitreous. More serious cases, where inflammation has followed the cataract extraction, and where the capsular membrane, thickened by the deposit of lymph or morbid products, is adherent to the adjoining structures, have been well classed by Mr. Jessop under the heading "inflammatory."

Whatever be the nature or variety of an after-cataract, we may assume that it results from imperfection of some sort or other in the technique of the operation, or from a faulty healing; and the question arises, can any special precaution at the time of the extraction of the lens avoid after-effects which continue to obscure the sight?

A peripheral incision of the cornea or a conjunctival flap encourages a rapid healing, and lessens the likelihood of false adhesion between the cornea and the capsule. Bruising of the corneal flap should be carefully avoided to encourage primary union. The method of lacerating the capsule at an extraction for cataract is likely to influence the after-results: a free tearing is advisable in order to leave a large opening afterwards, but care must be taken not to dislocate the lens nor to damage the hyaloid.

Where a distinct capsular membrane exists as an accompaniment of lenticular cataract, it should be certainly removed with the latter. The lens may be extracted in its capsule entire, or the anterior surface of the latter may be included in a circular cut by the cystitome and then extracted by capsule forceps.

In addition to a well-planned corneal incision, and thoughtful dealing with the capsule, the cortical *débris* must be as thoroughly as possible extruded from the eye. Emptying and cleansing of the lens cavity can be made very thorough where an iridectomy is done, but in simple extraction I am strongly of opinion that it is more essential to have a perfect replacement of the iris and pupil than a thorough removal of the cortical *débris*. In simple extraction I do all I can to ensure the escape of cortex and soft lens tissue with or directly following upon the delivery of the lens; if, then, other fragments are seen to be left, they are also extruded, but scarcely any further toilette is practiced for fear of causing paralysis of the pupil. The iris and the pupil are replaced as rapidly as possible.

A pupil apparently clear may be occupied by a very fine, scarcely-recognizable, transparent capsule, perhaps wrinkled, quite free of the iris, and passing down behind it towards the hyaloid, but often thicker in the coloboma, and more or less attached to the extraction wound in the cornea; or the capsule may be studded with distinct opacities of altered lens substance, or it may appear as a definite membrane. Should inflammation occur it obviously complicates the case by iritic synechiæ and other adhesions or thickening of the structures involved, or by healing together of the coloboma.

There is great diversity of opinion as to the risks of interference with opaque capsule after cataract extraction. Some look upon it as a very dangerous procedure; others do the operation in a large percentage of their cases and without much hesitation. Some resort to it only in order to restore sight to an eye that is practically valueless for purposes of vision, others when sight, though good, seems capable of being made still more perfect. It is important to know what was done in the earlier operation and how the eye healed after it. When inflammation, particularly septic inflammation, has occurred, interference should be resorted to only if necessary, and then with the greatest precaution.

Though there may be no special anxiety about an operation for after-cataract, it should be always undertaken with due precautions. The patient's health should have been attended to; the eye and all instruments used should be thoroughly cleaned and aseptic.

Careful examination of the membrane and its attachments should be made under magnification, and with concentrated light, with the pupil fully dilated, and these aids should also be taken advantage of during the operation itself.

I do not consider any early secondary operation advisable; it is quite uncertain how much *débris* may become absorbed, or to what extent the sight may improve. A very large amount of *débris* may be present after the extraction, particularly if the lens has been immature, or in the case of a young patient; but it is exactly under these latter conditions that natural absorption is most marked; we cannot tell early what change may occur, nor judge where the membrane is absent or thin to guide us in enlarging the opening.

The eye should have thoroughly recovered from the earlier operation before being subjected to another. I rarely operate at a less interval than three months between them.

It is absolutely essential that thorough recovery should have taken place, and that the eye should be quiet after an extraction which has been complicated by iritis or any inflammation. The irritability of the eye is easily re-established, and the *materies morbi* readily made active. If the operation is done too early under these conditions, not only does the opening in the opaque membrane refill and give no good result, but intractable inflammation, destructive cyclitis, or even panophthalmitis may result.

If the primary inflammation has been of a serious character, particularly if the ciliary body has been implicated, a year is not too long a time to wait before a further effort is made to restore the sight; indeed, if the patient has moderately useful vision, and there is an absence of complications that are likely to make matters worse, the eye had better be left alone. Each case must be taken on its merits.

The object of the operation in an after-cataract is to produce a clear aperture for vision, but it should also aim at a correction of anatomical defects and of conditions likely to lead to malnutrition of the organ—such as synechiæ, constricting bands, or a tendency to glaucoma. On the other hand, it should avoid unnecessary damage of the surrounding structures. Interference should be effectual, but it should be limited in range; it should be delicately but rapidly executed. The thinnest part of the capsule near the pupil is the best point to select for making an opening. Synechiæ of the iris should be divided.

Where it is likely to suffice, a modified Bowman needle is the best instrument to use. It must be made with a long cutting edge, and be used as a knife. Should the capsule not readily divide, but shift with the needle, at once introduce another one on Bowman's method, taking care that both needles penetrate the same opening in the membrane, so as to tear a single hole, and not leave a small band which divides the hole in two.

Lougnon (Moulins), to ensure a single opening, first passes a needle grooved on the side, along which he runs a second cutting needle.

When the membrane is quite thick or much implicated with the original pupil (which is often in its normal position), a somewhat stronger knife is preferable to the knife needle.

A tearing needle can be used in connection with the knife to fix some part of the pupil while the other cuts it. Cutting, not tearing, should always and under all conditions be employed to effect the opening in the capsule. Some operators use a sharp hook in the membrane to make a *point d'appui* against which the knife can cut. Others use a blunt one for the purpose of tearing open the aperture made by a knife, or even for the purpose of withdrawing the edge of the aperture with the adjoining capsule, so as to cut it off with the scissors.

Stilling tears the capsule by means of two sharp harpoon-headed needles. They are introduced in the limbus corneæ on opposite sides.

When the secondary membrane is so thick or complicated that cutting with the knife, or knife and needle, is likely to be ineffectual, capsular or iridotomy scissors must be used. Panas's forceps are passed sideways, one blade in front of the capsule and one behind it, the sac firmly grasped between them, and by small slow movements it is gradually withdrawn entire. If adhesions are present they must be specially dealt with, and the proceeding can be modified in details. If successful the operation is complete and final. The reaction is said to be insignificant, and the patient soon well.

There can be no doubt as to the great value of iridotomy with scissors where the capsule is firmly fixed, or where the iris fibres are stretched over the aqueous chamber by adhesion of the iritic pillars or of the pupillary region to the corneal wound. Where a thick capsule lies more or less free, it will be merely dislodged by efforts at discission, but it may be successfully bisected by the scissors.

Such cases of thick movable capsule as result after discission of ill-developed eyes with congenital cataract or in partial absorption after secondary cataract where the lens nucleus and fluid remain in the capsule sac are best dealt with by extraction forceps, which draw out the sac or membrane entire. The ideal extraction of a cataract is that of the whole lenticular body in its capsule. But this is only safe under exceptional circumstances. The total extraction of a secondary cataract or after-cataract, which consists mainly of hardened capsule, is also ideal; but it is not devoid of danger. Extraction of the capsule by forceps should be our last resource, but in some cases it is the only one that gives hope of sight.

The **President** thought that Mr. Richardson Cross had most admirably summed up the conditions which existed in cases of after-cataract. For dividing a thickened capsule, however, he far preferred an old Graefe's knife, which had been ground down very thin, to an ordinary discission needle. He also thought that a simple extraction without iridectomy was far less likely to be followed by secondary cataract than when an iridectomy had been performed.

Dr. Darier (Paris) thought that much unnecessary damage was done to the eye by going deeply into the vitreous when needling. He thought that care should be exercised not to do more than just divide the capsule. He described a curved needle he now used. If too thick to use this he advised the division of the capsule with scissors or its complete extraction.

Mr. Power said that in the course of a long experience he had tried most of the methods mentioned by Mr. Cross, and although in many cases each of these gave excellent results, yet sometimes they ended in disastrous failures. He thought there were individual differences in the toughness of the capsule which might be national. Thin capsules might easily be torn by any procedure, but when tough they were difficult to manage. He was of opinion that at least a year should elapse before any secondary operation should be undertaken and then only with hesitation and doubt, and he thought that in most cases if the vision were moderately good the patient should be contented.

Mr. Devereux Marshall was convinced of the danger of needling, and avoided it whenever he could. He was, however, fully persuaded that the earlier a needling were done, if it had to be done, the better on account of the capsule being then thinner and more elastic than later on, when it became tough, and refused to retract when divided. It was usually in these late needlings that disaster occurred. He agreed with Dr. Darier as to the advisability of not passing the needle deeper into the vitreous than was absolutely necessary; the less damage done in this way the better.

Mr. Tatham Thompson had originally been a great advocate of the double-needle discission, but had lately come to prefer a ground-down Graefe's knife. He did not think that puncturing the vitreous added materially to the risk, but he thought that a too superficial puncture of the capsule was the greater danger, as it led to greater dragging on adhesions. He avoided as far as possible the introduction of forceps.

Mr. E. Dykes Bower said that the remarks which had fallen from the President, Mr. Power, and Mr. Devereux Marshall represented entirely his own feelings, which were those of intense anxiety when approaching an operation for secondary cataract, more so than when performing an extraction; and a question which arose was whether the bad results which occasionally followed were really due to sepsis. The instruments were easy to sterilize, the cornea was avascular and the traumatism was not great; although the conjunctiva could not be rendered absolutely aseptic, yet this hardly seemed sufficient cause for suppuration. He thought the general health was responsible for a good deal. He always felt particularly anxious as to dealing with the capsule in cases of needling in high myopia, and he would like to know if other members had a similar dread of this particular class of case.

MR. A. HUGH THOMPSON asked Mr. Cross whether he introduced the needle inside the corneal margin or through the conjunctiva. He had learnt to adopt the latter place from Mr. Lang with the object of avoiding an escape of aqueous and diminishing the risk of sepsis.

MR. ROLL said he had found a ground-down Graefe knife very useful in a recent case where there was increased tension. He divided the membrane freely, and this had the effect of giving good vision and curing the glaucomatous symptoms. He also thought that if the anterior capsule were removed with forceps, far fewer secondary operations would be required.

MR. L. V. CARGILL described a method he had adopted for dividing the capsule. Two bent broad needles were passed, one above through the cornea and pupillary membrane, and the other below through the cornea and iris. A Tyrrell's hook was then passed through the lower incision in cornea and iris, threaded up behind through the upper incision in the membrane, the hook was turned forwards, and the intervening capsule was drawn downwards, and cut off short at the lower incision with iris scissors.

MR. HARTRIDGE showed his capsulotomy needle.

MR. RICHARDSON CROSS, in reply, said that in simple extraction he thought it far more important to thoroughly replace the iris than to so thoroughly remove the soft matter. He also was of opinion that if no iridectomy were done the liability to glaucoma was far less, and in fact he had never seen a case. He did not think that all the cases which did badly were due to sepsis, and he always entered the needle at the periphery in the conjunctiva near the cornea. He thought that all cases should be treated on their own merits, and no fixed rule could be given as to what vision justified interference after a cataract had been extracted. He had no unusual dread in dividing a capsule after the removal of a lens in cases of high myopia, and in fact he had never seen complications arise in this particular class of case.

ABSTRACTS FROM MEDICAL LITERATURE.

By W. A. SHOEMAKER, M.D.
ST. LOUIS, MO.

PRIMARY GANGRENE OF THE EYE-LIDS.

Roger and Weil, *(La Presse Medicale*, Sept. 26, 1901), report a case of primary gangrene of the eye-lids, in a man aged 33. Œdema suddenly developed at the internal canthus, which rapidly spread to the upper and lower lids and surrounding tissues, producing an erysipelatous condition, upon which appeared spots of gangrene; there were no phlyctenules and no enlargement of the neighboring glands. The constitutional symptoms were fever and albuminuria.

The lids were punctured, and cultures made from the fluid obtained. These showed an aërobic micrococcus, pathogenic for rabbits and guinea pigs, but not for rats or mice. Under treatment the condition gradually improved. Primary gangrene of the eye-lids is very rare; this seems to be the first case that has been reported. Like gangrene of the breast, gums and male genitalia, in which aërobic micro-organisms have been found, this condition is curable.

CATARACT OPERATIONS IN THE AGED.

E. Mendel, *(Berliner Klinische Wochenschrift)*, thinks advanced age does not offer an unfavorable prognosis for cataract extraction. Delirium occasionally occurs, but the most serious complications are those related to the heart, lung, and bladder. His observations embrace 1,645 cases of nuclear cataract among which there were 36 cases over 80 years of age. The results were unsatisfactory in only 2 of the 36.

ON THE DESIRABILITY OF FURTHER DATA CONCERNING THE PREVENTION OF OPHTHALMIA NEONATORUM.

Lucien Howe, *(Phila. Medical Journal*, Jan. 18), refers to the data collected by Kostling, *(Arch. für Gynaekologie*, 1896), who, in summing up the combined experience of obstetricians in over 17,000 births, in which no prophyelatic treatment was used, found that ophthalmia developed in over 9 per cent.; in over 24,000 births treated by the Credé method about one-half of 1 per cent. developed the disease. Such results clearly indicate the duty of the obstetrician. The author thinks a law should be passed compelling every practitioner who attends a case of confinement in an institution supported in part, or wholly, by public funds, to make use of the Credé method, or some other method which has, in a large number of cases, been found equally efficient—a suggestion we most heartily endorse. The objection to 2 per cent. solution of nitrate of silver is, that it is always painful and frequently causes a catarrhal conjunctivitis.

The ideal remedy is one that is efficacious, causes no pain and no catarrhal conjunctivitis. In the *Centralblatt für Gynäkol.*, Aug. 3, 1901, Piotrowski gives a record of 1030 children treated with a strong solution of boric acid and a 10 per cent. solution of protargol. Not a single case developed ophthalmia, and a slight catarrhal conjunctivitis was produced in only 1.2 per cent.

If other observers can get equally good results from this treatment, it is certainly superior to the method of Credé. The author urges the necessity of more such data, especially as to the value of protargol, and for this, he very properly says, we must look to obstetricians.

FROST BITE OF THE CORNEA.

E. L. Meierhof, (*New York Medical Journal*, Nov. 30, 1901), reports two cases of clouding of the cornea in infants less than two months old, due, he thinks, to the excessive application of cold in catarrhal conjunctivitis. Ice cold pledgits had been applied to combat hemorrhagic ophthalmia. The cloudiness soon disappeared when warm applications were substituted. The author urges the necessity of being very careful about the application of cold, especially when there is no swelling of the lids.

IDIOPATHIC DETACHMENT OF THE RETINA.

Sinclair, (*Journal of Pathology*, June, 1901), has studied, by experiment, the etiology of detachment of the retina. He believes that the theory of Nordenson, that the detachment is caused by the traction of adhesions between vitreous and retina, is, in some cases, the correct explanation, but does not think it applicable in the majority of instances. He thinks the theory of diffusion is the correct one in most cases. He produced detachment in rabbits' eyes by the post retinal injection of salt solution, and also of blood plasma; after the injection of the latter the detachment progressed, owing to the continued accumulation of fluid diffused from the vitreous. The vitreous fluid is composed mostly of water (98 per cent.), while the post retinal exudate, in inflammatory conditions, is a highly albuminous fluid. Looking upon the retina as a dialysing membrane, an accumulation of inflammatory exudation, behind the detachment, will tend to increase by the process of diffusion of the vitreous fluid through the retina; this is the only way we can account for those cases where there is a rapid extension of the detachment without increase of intraocular tension. The fact that changes in the vitreous often take place in eyes, in which retinal detachment subsequently occurs, cannot be taken as proof that they cause the detachment. The truth seems to be that both conditions are brought about by uveal inflammation, and are, therefore, frequently found together.

THE INFLUENCE OF THE CONDITION OF THE APPARATUS OF ACCOMODATION OF THE EYE, ON THE DEGREE OF CURVATURE OF THE CORNEA.

V. A. Dobraslavin, (*Vratch*, Nov. 3, 1901), found by experiments on animals that the cornea changes the radius of its curvature under the influence of spasm or paralysis of accommodation, caused by the use of eserine or atropine. He believes such changes also occur under normal conditions of accommodation.

PAMPHLETS RECEIVED.

"Forty-eighth Annual Report of the Girls' Industrial Home and School, St. Louis, Mo."

"Methyl (Wood) Alcohol as a Cause of Blindness. Should it be Placed on the List of Poisons?" by S. M. Burnett, M.D

BOOK REVIEWS.

A MANUAL OF OPHTHALMOSCOPY FOR STUDENTS AND GENERAL PRACTITIONERS. By J. E. JENNINGS, M.D. With ninety-five illustrations and one colored plate. *P. Blakiston's Son & Co.*, Philadelphia. 1902.

This is a very handy and practical text-book which will prove of great value to students and general practitioners who, at a moderate cost, want to be supplied with a safe guide into the mysteries of ophthalmology without buying a larger and expensive treatise on ophthalmology. The illustrations, a number of which are original, are to the point and aid the reader to more fully comprehend the text.

THE PRACTICAL MEDICINE SERIES OF YEAR BOOKS. Edited by G. P. HEAD, M.D. Vol. III.: Eye, Ear, Nose and Throat. By C. D. Wood, M.D., A. H. Andrews, M.D., and T. M. Hardie, M.D. *The Year Book Publishers*, Chicago, Ill. December, 1901.

This book attempts to give the reader a review of the most important work in its different departments. The chapter on the eye is by C. A. Wood, well written and full of information, while in the nature of things not a complete review by far. It was the intent, as stated by the author, to give prominence to such works as would benefit the general practitioner.

SPRING CATARRH OF THE EYES. By H. DANVERS, M.D. With three plates. London: *John Bale, Sons & Danielsson.* 1901.

This little monograph gives a very complete general résumé of what is known of spring catarrh, to which are added the description and anatomical examination of three new cases. This is followed by hints as regards the therapeutics, in which ice-cold packs are especially recommended. It should be read and appreciated.

ALT.

THE AMERICAN JOURNAL
OF
OPHTHALMOLOGY.

VOL. XIX. MARCH, 1902. No. 3.

ORIGINAL ARTICLES.

THE INDICATIONS FOR IRIDECTOMY IN GLAUCOMA AND THE METHOD OF OPERATING.*

BY CHARLES J. KIPP, M.D.,
NEWARK, N. J.

I AM well aware that what I shall have to say here to-night has been said a great many times, and said better, ever since Albrecht v. Graefe's first paper on Glaucoma was published in 1857, and I should not have written this paper had I not received an urgent request from our chairman to do so.

The subject assigned to me by our chairman is:

1. The Indications for Iridectomy in Glaucoma.
2. The Method of Operating.

I shall follow the usual practice of dividing glaucoma in:

1. The Acute Inflammatory or Congestive form;
2. The Chronic Inflammatory or Congestive form; and
3. Simple Glaucoma.

I may say right here that in the latter class I include only cases in which an *appreciable increase of tension*, even if only for a short period, is present in addition to the excavation of the optic nerve entrance and the other symptoms commonly recognized as belonging to this affection.

---

*Read before the Section of Ophthalmology, New York Academy of Medicine, November 18, 1901.

Iridectomy is indicated in acute congestive glaucoma as long as there is perception of light, and even for some days after complete blindness has set in.

Iridectomy is the remedy par excellence in this disease; it has stood the test of time, and the world owes a great debt of gratitude to the late v. Graefe for its discovery. While it is true, as v. Graefe found, that we may have a good result if the operation is made within a fortnight after the outbreak of the attack, it is advisable to perform the operation as soon as possible after the diagnosis is made. Some surgeons hesitate to operate during the premonitory stage, if the other eye is sound, but I cannot see that anything is gained by delay; the acute attack is pretty sure to come or the affection will gradually pass over into the chronic form of the disease. The earlier the operation is done in this disease the better will be the result.

Like other remedial measures, iridectomy has its limitations even in this form of glaucoma. It cannot restore the loss of sight and the contraction of the visual field, that are due to anatomical changes in the optic nerve produced by long continued or very rapidly increased intraocular pressure; all it can do is to remove the turbidity of the media and ischæmia of the retina due to increased pressure.

If both eyes are suffering from acute congestive glaucoma at the time the patient is first seen, the question arises, shall we operate both eyes at the same time or shall we operate only one; and if only one, *which*—the better or the worse? Most operators of experience regard it as bad practice to operate both eyes at the same time, as it is well known that the predisposition to chorio-retinal hemorrhage and to malignant glaucoma exists almost always in *both* eyes. The safest plan is undoubtedly to operate first on the worst eye and if all goes well to operate the other some days later. I have been obliged to operate on both eyes at the same time and have had no reason to regret doing this. My practice has been in cases in which both eyes were affected, when first seen, to instill a ½ per cent. solution of eserine several times, and if a marked contraction of the pupil follows in one eye, but not the other, to operate first on the one *least* affected by the eserine and on the other several days later. If the eserine has had *no* effect on *either* eye, I have administered a general anæsthetic and operated on *both* eyes at the same time. It is a well-known fact that soon after an iridectomy in acute inflammatory glaucoma, the other eye, which was apparently sound when first operated on, becomes attacked by the same disease. This occurred in several of my cases in former years. In most of these the symptoms subsided under eserine for a time. In the cases which did not yield to this drug I operated at once. For several years I have instilled eserine in the sound eye before the operation, and during the time the patient was in bed, and since then I have had no case in which the good eye was attacked while the patient was under treatment. Although months and even years may elapse before the second eye is attacked, it very seldom escapes entirely. With this fact in view, together with the fact that it is much easier to make a satisfactory iridectomy on the sound eye than on one that has glaucoma, some of the German surgeons do not hesitate to advise an iridectomy on the *still healthy eye* before even the premonitory stage is present. Commenting on this fact, Czermack, in his book, "Die Augenärztlichen Operationen," seventh part, page 762, 1898, says : "One can also advocate a prophylactic iridectomy on an eye that shows merely signs of a *disposition* to glaucoma—that is, if it has a markedly shallow anterior chamber *and the other is suffering or has already suffered from glaucoma.*" More recently Dr. De Schweinitz has plead for a prophylactic iridectomy under the same circumstances in a paper which he read before the American Ophthalmological Society in 1901.

Bearing in mind the accidents that have happened to me and others in eye operations, I should hesitate to urge upon my patients a prophylactic iridectomy unless they were obliged to go to some remote region where competent help could not be had.

In the chronic inflammatory glaucoma, iridectomy is indicated as long as fair vision exists in the eye, and the contraction of the field of vision is not great. I regard iridectomy as the best remedy we have for this form as well as in the acute, though the result obtained by it is, at best, the arrest of the disease. Much will depend on the degree of degenerative changes in the optic nerve present at the time of the operation. If cloudiness of the media exists at the time of the operation, the impairment of sight due to this will of course be removed and considerable improvement in vision will be the result. In many cases of this form we cannot hope for a permanent reduction of the increased tension and for more than a retardation of the progress of the disease. In a very few of the chronic form the sight is made worse by the operation. In cases in which the sight was much impaired, the defect of the visual field approached the point of fixation and the excavated papilla was of atrophic appearance, total blindness has sometimes followed the operation. It is also in this form of the disease that the so-called malignant glaucoma is most frequently developed a short time after the performance of the iridectomy. That this dreaded condition is not, however, the result of the iridectomy but is due to the state of the eye, although we know of no sign by which it can be recognized before hand, is shown by the fact that it always occurs also in the other eye if this is operated on for the same disease, whether the operation is an iridectomy or a sclerotomy. In one of Schweigger's cases in which malignant glaucoma followed the iridectomy, the other eye developed an attack of glaucoma seventeen years later, he made a sclerotomy, and this was also followed by malignant glaucoma. Such cases are fortunately very rare, and should not prevent us from giving patients with the chronic form the benefit of an iridectomy, remembering that the disease, if left to itself, ends in absolute blindness.

In glaucoma simplex, iridectomy is indicated if the eye shows an appreciable increase of the intraocular tension, central vision is good and the visual field is not much contracted. It is at present quite generally held that iridectomy is least effective in this form of glaucoma, and some of the ophthalmologists regard it as entirely useless. It must be admitted that the operation here never restores the vision that has been lost, or restores the field of vision; all we can hope for is to arrest the disease and to restore the normal intraocular tension. And even *this* the operation not infrequently fails to accomplish if the atrophy of the optic nerve has proceeded too far. There is, however, no doubt in my mind that in many of my cases in which I was permitted to operate in the early stage of the disease, the operation arrested the progress of the disease for many years; and what other remedial measures have we that will do as much? I know of none. I have tried sclerotomy and myotics, but the results were so discouraging that I now advise my patients not to waste precious time with myotics, but to submit to the operation so long as the vision is fairly good and the visual field is only moderately contracted. And if the first operation fails to arrest the progress of the disease, I have sometimes made another iridectomy beside the first one, a few months later. We know that simple glaucoma sooner or later leads to total blindness. How soon we cannot tell, and we cannot, therefore, positively say that an operation has hastened or delayed this catastrophe. If, as seems probable under the use of myotics, fifteen years may elapse from the time of the appearance of the disease until great impairment is evident, as is stated by an eminent ophthalmologist, from personal experience, then we have less ground than ever to assume that the operation has *really* been of benefit to the disease. I do not think that I have ever seen a case of glaucoma in which, without the operation of iridectomy, sight was not lost in much less time. Some impairment of vision is unavoidable, even in our most successful cases, and is due to the large coloboma and the corneal astigmatism resulting from the operation.

Malignant glaucoma has also followed this operation in a small number of cases of simple glaucoma, but the cases are fortunately so rarely met with that they should not prevent us from operating. If both eyes require the operation it is best to do here as in the other forms of glaucoma already discussed, to operate first the worst eye even if it is totally blind, and, if malignant glaucoma does not develop, to operate the other. In the cases in which there is much contraction of the visual field when first seen, I explain to my patients or their friends the natural history of the disease, the chances of arresting the progress of the disease by the operation, the *possibility* of disastrous result following it, and leave to them the decision as to what shall be done.

Secondary Glaucoma.—A partial staphyloma of cornea, simple ectesia of the cornea, exclusion of the pupil, swelling of the lens, dislocation of the lens in anterior chamber or the vitreous chamber, intraocular hemorrhage, and intraocular neoplasms may all give rise to an increase of intraocular tension. In exclusion of pupil and partial corneal staphyloma, an iridectomy will reduce the tension, but in the other conditions named it is useless. Glaucoma hemorrhagica is a touch-me-not to most surgeons. Schweigger is about the only one who thinks that an iridectomy is often of service in such cases.

Method of Operating.—To make a large and clean iridectomy in this disease, with much chemosis, a very shallow anterior chamber and a widely dilated pupil, is one of the most difficult tasks the ophthalmic surgeon is called upon to do. If great chemosis is present and the pupil can be contracted by eserine it will be sometimes to the best interests of the patient to delay the operation till the chemosis has somewhat subsided.

A general anæsthetic will be required in many cases of the acute and chronic inflammatory cases, though the subconjunctival injection of cocaine and eucaine are said to produce sufficient insensibility to permit of an accurate operation. Instillation of cocaine or holocaine even if combined with solution of the extract of suprarenal glands rarely reduces the sensibility sufficiently in these cases. In simple glaucoma it is almost always practical to operate under local anæsthesia.

Cleansing the eyelashes and the brows and the skin of the lids, and flushing the conjunctival sac with sterile water or physiological salt solution should precede the operation. Only sterile instruments should be used.

I do not remember a single case of my own in which suppuration of the wound followed the operation, but it is best to be clean.

Unless the iris is more disorganized here than elsewhere the iridectomy should be made upward, so that the coloboma lies under the upper lid. I nearly always use a narrow cataract knife for the incision, enter the sclera about one mm. from the clear corneal margin and make the counter puncture at a corresponding point. The section should have a length of 8 mm. In cutting *out*, the edge of the knife is turned slightly forward, but should come out in the sclera and make the conjunctival flap as narrow as possible. In cases of very narrow shallow anterior chamber it is not always practical to make an incision of this length and one must be satisfied with a smaller one.

The iris is seized at about the middle of its width, drawn straight out, and cut close to the lips of the wound by two or three successive strokes of the scissors, first close to one end of the incision, then at the middle, and last at the other end. If the sphincter corners do not return to their natural position, a blunt probe should be carefully introduced into the anterior chamber to disengage the incarcerated iris from the angles of the wound. Rubbing the adjacent cornea will accomplish this only rarely. Some surgeons prefer to make the incision with a broad lance-shaped knife and to tear the iris from its root. I have tried both, but have given them up again. Priestly Smith makes a posterior sclerotomy immediately before making the iridectomy, which he thinks facilitates the making of a good incision, diminishes the immediate risk which attends it and obviates the forcible displacement of the lens forward, which sometimes annihilates the effects of a good operation. He is under the impression that his results have been decidedly better than could have been obtained by iridectomy alone. If not employed as a preliminary step, he advised this operation also immediately after the iridectomy, if the tension of the eye is found sufficiently reduced.

Posterior sclerotomy can be performed with the aid of cocaine only, even in congestive cases. "The patient turns his eye inward so as to expose the outer part of the sclera. The surgeon taking a v. Graefe knife in one and forceps in the other, seizes the conjunctiva near the horizontal meridian and slides it downward a little over the sclera. He then punctures the sclera on the horizontal meridian at a point at least five mm. from the margin of the cornea, keeping the back of the knife toward the cornea, and the point directed toward the center of the globe so as to avoid touching the posterior pole of the lens." De Wecker thinks that the failure of the iridectomy is mostly due to incarceration of the iris in the angles of the wound, caused by increased intraocular pressure, and suggests that an anterior sclerotomy downwards be made shortly before the iridectomy, which can then be more perfectly done afterwards. I have always succeeded in making at least a small iridectomy under the most unfavorable circumstances and have later on made another beside the first one.

In simple glaucoma there is usually no great difficulty in making a large and peripheric iridectomy. At least one-fifth of the iris should be excised down to its ciliary insertion, and special care must be taken to prevent incarceration of the iris at the corners of the wound.

If a repetition of the operation is required it is best to make the second beside the first iridectomy, provided the iris is not disorganized here more than elsewhere. In many cases the anterior chamber is not restored for several days after the operation; this is no bad significance, provided there be no œdema of the lids and pain in the eye. The patient should be kept in bed until the wound is closed.

A peculiar mode of union of the incision, called by v. Graefe cystoid cicatrix, is occasionally met with. In these cases the lips of the wound are separated by a web of cicatricial fibres, which by the intraocular pressure are bulged out like small vesicles. Occasionally these fibres give way and the aqueous escapes under the conjunctiva. A cystoid cicatrix is always a source of danger, as it will permit the entrance of pathogenic micro-organisms into the eye. If large they should be treated as iris prolapses, by excision or cauterization.

Of the *accidents* during the performance of iridectomy wounding the iris and lens capsules are most frequent. If the point of the knife becomes engaged in the tissue of the iris slight lateral and forward movements will usually disengage it. If not successful in this, the knife must be withdrawn and the wound be enlarged with a fine pair of curved scissors. The anterior capsules may be wounded by the point of the knife, by pressure of the back of the knife through the iris intervening, by the iris forceps, during manipulation to reduce the incarcerated iris in the angles of the wound, or by the sudden advance of the lens through the sudden reduction of pressure. The development of cataract in a glaucomatous eye is fraught with the gravest consequences, and extraction of the lens is usually necessary. In one of my earliest cases of acute inflammatory glaucoma, a woman about 50 years of age, whose right eye had been lost years before from the same disease, I discovered a week after the iridectomy that cortical lens matter was coming through the wound in the upper part of the lens. I was not aware that I had wounded the lens. The development of the cataract was not attended by any appreciable increase of intraocular tension. Two weeks after the operation the anterior chamber was full of lens matter. Projection was perfect. I was not permitted to make simple extraction. At the end of three months the whole lens, nucleus included, had been absorbed and vision was $^{20}/_{60}$ with the proper glass. The woman when I last saw her, more than thirty years after the operation, was still able to read the newspaper, and was very grateful for what I had done for her. I have related this case for the encouragement of those who may have the same misfortune of wounding the lens.

Retino-choroidal hæmorrhage occurs fortunately very seldom after an iridectomy. In the cases reported, the lens, vitreous body, and retina were forced out of the wound, and enucleation became necessary. Hæmorrhage in the retina or vitreous body was in most cases present *before* the operation.

The so-called malignant glaucoma has occurred mostly after iridectomy for chronic inflammatory glaucoma and glaucoma simplex. As I have before said, we know of no sign by which we can recognize a predisposition to this condition beforehand. Great pain, lachrymation, swelling of the lids, chemosis of the ocular conjunctiva, set in some hours after the iridectomy. The lens blocks the wound, the anterior chamber is absent, and tension is greatly increased. Whatever vision there was is soon totally destroyed. Weber has suggested a method for relieving this condition; it is to be done as soon as the iridectomy wound has closed. A lance-shaped knife enters the sclera in the horizontal meridian about 8 to 10 mm. from the outer margin of the cornea and is then turned on its axis about a quarter, so as to make the wound gap. Then gradually increasing pressure is made through the lid or with a Daviel spoon on the cornea directly backwards and the lens pressed back in its place. The maximum pressure is made from one to one and a half minute, to permit the accumulation of the aqueous humor. I do not know of a single case in which this manœuvre succeeded. Enucleation was necessary in all for the relief of the pain. The free use of the salicylate of sodium has in the hands of a few relieved the pain and improved the sight.

Hæmorrhage in the anterior chamber is of frequent occurrence after iridectomy, and does not interfere with the healing process.

Prolaps of vitreous is not often seen during the operation, and its occurrence does not seem to do much harm.

The after treatment pursued by me in the last few years has been very simple. I keep the patient in bed till the wound is closed. I place an aluminum shield over the operated eye, cleanse the eye daily with sterilized water and instill a drop of the atropin solution after each dressing. The other eye I leave open and instill one drop of a ¼ per cent. eserine solution in it once daily.

This plan is much more comfortable to the patient than the bandaging of both eyes, and the healing of the wound seems to progress as speedily as under the bandage.

PAMPHLETS RECEIVED.

"Report of a Case of Optic Neuritis," by W. B. Johnson, M.D.

"Memoir of William Fisher Norris," by Chas. A. Oliver, M.D.

"Otitic Sinus Phlebitis and Thrombosis," by J. E. Sheppard, M.D.

"A Case of Otitic Brain Abscess; Operation; Recovery," by E. B. Dench, M.D.

"Thirty-second Annual Report of the New York State School for the Blind. 1901."

"The Present Position of Ophthalmic Science and Art," by D. B. St. John Roosa," M.D.

"Sections of a Glioma of the Retina Stained by Mallory's Neuroglia Stain," by B. Pusey, M.D.

HETEROPHORIA AND RESULTING REFLEX NEUROSES.

BY L. R. CULBERTSON, M.D.,

ZANESVILLE, OHIO.

ALL oculists are familiar with many of the neuroses that may result from ametropia, and some are familiar with the ills resulting from heterophoria. We should bear in mind that not only is the ciliary muscle supplied with sensation by the fifth nerve, but all the recti and the obliques are likewise supplied. Strain on these muscles from heterophoria or ametropia will be reflected to any branch or connection of the fifth. As the fifth has connection with the pneumogastric, the organs supplied by the latter nerve may suffer, and dyspepsia, biliousness, constipation, palpitation of the heart, etc., may result.

Neuralgia of the face and neck,[1] pulling of the muscles in the back of the neck,[2] wry-neck,[3] ringing in the ears, clicking noise due to reflex action of muscles at orifice of Eustachian tube, catarrh of throat (reflex trophic disturbance), congested turbinates, hyperæmia and inflammatory conditions of retina, nausea,[4] dizziness,[5] agrophobia,[6] neurasthenia,[7] impaired nutrition of scalp (dandruff), acne over the area supplied by the fifth or any of its connections, hemianæsthesia, epilepsy,[8] chorea, hystero-epilepsy, epileptoid conditions,[9] laryngeal tiring in singing, feeling of chilliness or sleepiness on attempting to read or work, cold hands and feet, high arterial tension with low specific gravity of the urine, phosphaturia, styes,[10] neuritis,[11] glaucoma,[12] cataract,[13] feeling of obstruction in the throat and hawking without any obstruction being present, toothache (I knew of one case of toothache with great heterophoria; nearly all the teeth, good and bad, were removed with no benefit); sniffling, stenosis of os uteri,[14] inability to write in a straight line (due to declination of eyes), causing children to throw the weight of the body on one foot (declination of eyes), wrinkling of face muscles,[15] urticaria, formication, stoop-shoulders,[16] holding chin high,[17] small ulcers of tongue or gums (trophic disturbance through the fifth nerve). I have some reason to believe that heterophoria—and ametropia also—may be a common cause of Bright's disease, although it will take an immense amount of the most careful and perfect work by the best operators to prove this.

---

[1] [2] [3] [4] [5] [6] [7] [8] [9] [14] [15] [16] [17] George T. Stevens.

[10] [11] [12] [13] A. L. Ranney, *loc. cit.*

One case that came under my observation had a very high grade of heterophoria, and urine showed urates, no tube casts, and specific gravity 1004-1008 for a long period. After several muscle operations the sp. gr. began to rise. After nearly all the operations were completed the sp. gr. rose to 1020, urea normal, no urates. The sp. gr. has remained for a year at 1020. Before operation the patient had numerous gouty symptoms such as small concretions in the auditory canal and in the pores of the skin on the back,* dandruff, etc. Since the operations all of these symptoms have vanished.

Many other symptoms might be here enumerated. I will now give notes on a few cases in my practice.

Case I.—Mrs. F., age 45, has L.H. 1°, exophoria 2°. I gave her + 1.5s ⌒ +, 5 cy 90° each eye for near and far. No relief. She has persistent headaches. I weakened her lenses; no relief. I did a tenotomy on the left sup. rectus and reset it. This produced orthophoria. Six weeks after no headache, a year after ditto. She can use her eyes without any fatigue.

Case II.—Miss M. R., age 11. Has chorea, constant pulling of head from one side to the other (this is no doubt synchronous with the efforts of the eye muscles to pull the eyes on a level), jerkings of hands and feet. Has 1° L.H. and 1½° exophoria. Atropia used and ametropia found R.E. + 2.75s. L + 2.75s. These glasses were given. No improvement in symptoms. Then + 2.s each were given, with very slight improvement in symptoms. Arsenic was given for some time; no improvement. Then I did a tenotomy on the left superior rectus and reset it. I got no hyperphoria or exophoria. Next day all jerking of the head had stopped and has never reappeared. Four weeks later she had gained twelve pounds in weight and her nervousness was all gone. Her face was bright and happy and the former expression of fear had disappeared. A year later she has orthophoria, is strong and healthy, has no nervousness, and is growing rapidly. She wears + 2.5 D sp. each eye.

---

*J. Hutchinson Bowman Lecture, 1884.

Case III.—Mrs. W., age 39. Has ½° R.H. and 4° esophoria. Is afraid to walk on the street for fear of falling. Under atropia she requires R. + 1.25s ○ + .5 cy 60° L. 2s ○ + .25 cy 90°. She wore these with little relief. Then + .75s ○ + .5 cy 60° and + 1.s ○ .25 cy 90° were given, and they, too, gave little relief. Then I did a tenotomy on right superior rectus and reset it. Two months after I reset the left superior rectus and got no hyperphoria or esophoria. Six weeks later all dizziness was gone. She can go any place, do work, and dance, sew, read, etc., with perfect comfort. A year later she is entirely well and never has any of the old symptoms. She has orthophoria.

Case IV.—Miss C. R.H. ½, esophoria 6°. Feb., 1899. Under atropia R.E. + 2.5s ○ + 5 cy 90°, to E. + 2.25s ○ + .5 cy 90°. These worn for a year and considerable relief was given, but still very nervous. Is neurasthenic and says she "fears she will lose her mind."

July 4. Cut and reset internal rectus R.E.

Aug. 1. Reset left internus.

Aug. 25. Graduated tenotomy on inf. recti.

Oct. 24. Cut and reset left sup. rectus.

Nov. 20. Cut and reset sup. rectus right eye.

Dec. 3, 1901. Cut and reset outer tendon left eye. Has 1° esophoria and 1° L.H. Can read and sew with comfort, feels well and eats well, no dizziness, mind clear, gaining in weight. Will have to do one more operation.

Case V.—Miss E. W., age 11. Sept., 1898. Internal strabismus. Has chorea, also precocious menstruation (probably originating from nervous disturbance due to eye strain). Under atropine requires + 1.75 sp. each eye. Gave these, but they gave very little relief. Tenotomy on left internus Nov., 1898. Jan., 1899. No esophoria. Chorea gone but menstruation persists. Wears glasses. Never had any return of chorea. On neither side of family is there a history of precocious menstruation.

A SEPARATE GUMMA OF THE CARUNCLE AND OCULAR CONJUNCTIVA. REPORT OF A CASE WITH A COMPLETE BIBLIOGRAPHY APPERTAINING THERETO.

BY GEORGE F. SUKER, M.D.,

Professor of Clinical Ophthalmology in the Post Graduate Medical School; Clinical Instructor in Ophthalmology in the College of Physicians and Surgeons, University of Illinois.

CHICAGO, ILLINOIS.

SOMEHOW or other syphilitic lesions of the ocular adnexa and conjunctiva, especially when of the primary or tertiary variety, always attract a good deal of attention. The reason for this is the rather infrequency of their occurrence. Though the secondary and tertiary syphilitic lesions of the ocular structures, such as the cornea, sclera, iris, choroid, retina, lid, and optic nerve are not of every day occurrence, yet they occur more frequently than gumma of the conjunctiva or caruncle. However, a primary syphilitic chancre of the ocular conjunctiva is rare, and one of the caruncle has never been recorded. In addition we find in the literature that about thirty-five references to gumma of the conjunctiva have been recorded, while only one (Taylor, 1875)[28] of the caruncle has been reported. Though the vagaries of syphilis are many and the character of the lesions manifold, yet not one case has ever been reported which presented a distinct gumma of the caruncle and at the same time another arising from the conjunctiva in one and the same eye.

Such a case, however, has been noted, carefully studied, and is made a part of this paper.

A very careful research into the literature upon the subject of gumma of the caruncle has yielded only one case. This case is reported by Taylor,[28] and is quoted by Knies.[12] Though this case was reported in 1875, still no mention of another has been found in the literature at the disposal of the writer. And it is this apparent scantiness of such cases which led to the report of the one below.

A primary syphilitic lesion of the conjunctiva is more frequently observed than perhaps a like lesion of the palpebral edge. Chancre of the ocular conjunctiva is more frequently seen abroad than in this country. On the other hand, a gumma of the lid is by far more frequent than a gumma of the conjunctiva. Weeks,[36] quoting Morrow, says that the gummata appear as small discrete tumors, varying in size from a pea to a bean. The majority of observers report more often on a single gumma than on multiple gummata of the conjunctiva.

E. L. Holmes[34] cited a case of syphilitic enlargement of the caruncle, but this occurred with a primary chancre of the conjunctiva; hence it could not be taken as a gumma. Though Holmes seemed inclined to consider the enlargement as gummatous, yet Hyde, who saw the case in consultation, pronounced it a primary lesion. Strange as it may seem, the preauricular glands in this case were enlarged. This glandular involvement is a constant and almost diagnostic symptom of gumma of the conjunctiva.

On the other hand, quite a number of cases are recorded in which there was a gumma—single or multiple—of the ocular conjunctiva. But only a few cases of gumma of the cornea or sclero-corneal juncture have been recorded (Mauthner,[20] Ring,[21] Walker[31]). In Zeissl's Lehrbuch der Syphilis, Mauthner speaks of a "keratitis punctata interstitialis" in connection with gumma of the sclero-corneal juncture. Perhaps in these cases there was a so-called syphilitic thickening, not unlike that appearing in the conjunctiva as a secondary manifestation.

Another variety of gumma of the conjunctiva is the so-called syphilitic blotch. These are small circumscribed areas, slightly elevated and not very vascular. These blotches, no doubt, are true gummata of a very peculiar character in so far as they appear more like an infiltration than anything else. Only a few cases of this nature have ever been reported—France,[9] Smee,[27] Wecker,[32] Hirschberg.[11] There seems to be a difference of opinion as to their vascularity. Smee maintains that they are vascular, while France and Hirschberg hold the opposite. This variance in the opinion may be ascribed to the time of the observation of the gumma. Apparently the more recent blotches are more vascular than the ones of longer standing. France says they are very protracted unless energetically treated, which is true of any tertiary lesion of the conjunctiva.

Lastly gumma of the conjunctiva, *i. e.*, ocular portion does not seem to be such a very rare clinical observation. However, Swan M. Burnett,[35] in Norris and Oliver's System of Eye Diseases, makes this very pointed remark: "At least one case has been reported in which a true gumma had its seat in the conjunctiva." Even Hirschberg[11] makes the following statement: "Conjunctivitis gummosa hat bisher in der Literatur nur eine geringe Berücksichtigung gefunden." These two statements naturally need to be taken with some latitude, for careful research will not uphold them.

C. S. Bull,[4] in 1878, gave a very accurate and detailed report of a case of gumma and a complete list of the then reported cases. Since that time quite a few cases have been published, as the appended bibliography will show.

Therefore, it is strange in view of the fact which has been given above and considering the cases herein cited that this statement "but few cases of gumma of the conjunctiva are on record" should appear in the American Text-Book of Genito-Urinary Diseases, page 702. This certainly is true as pertaining to the caruncle, but indeed not with reference to the conjunctiva—ocular or palpebral. The idea the writer wishes to convey is that gumma of the conjunctiva is not such an exceeding clinical rarity as the books would have us believe, although it is not an every day syphilitic manifestation. What may be considered as a rarity, in addition to gumma of the caruncle, is a syphilitic thickening of the conjunctiva as a secondary manifestation. This thickening as a tertiary symptom is by no means as rare as the above. Perhaps some of the syphilitic blotches heretofore mentioned can be classified as secondary conjunctival thickenings.

Another point of interest in these gummata of the conjunctiva is the time of their appearance. Several have been noted as early as eighteen months after the primary lesion. Then again several years have intervened, even as many as twenty. Lawford[14] (Trans. of the Br. Ophthal. Soc., Vol. II., page 38, and reviewed in the Ophthalmic Record, Vol. 7, page 630) reports one of these tardy-appearing gummata. However, the average time of appearance is about three to five years after the initial lesions. Likewise, the location of the gumma is of interest. By far the greater majority appear in the lower ocular half, though it is asserted that a good many have their origin in the upper palpebral conjunctiva, and from here invade the ocular portion. Still in analyzing the cases reported you will find that a more or less extensive chemosis and swelling, as well as an induration, existed in the palpebral conjunctiva, which may have given rise to errors in judgment as to the exact origin.

Superficial ulceration of these conjunctival gummata are a frequent observance, as are also their cicatrization. A notable feature in this class of cases is the enlargement of the preauricular and submaxillary glands, mention of which has already been made above. The enlargement of these glands aids the diagnosis materially.

With reference to the extent and size of these gummata, it may be said that they vary from the size of a pea to that of an almond. The usual starting point for these conjunctival gummata is in the tissue of the upper lid or directly at the fornix conjunctivæ. From here the tendency is downward, and at the same time a chemosis of the ocular and palpebral conjunctiva ensues. Yet quite a few start in other parts of the bulbar conjunctiva which have no direct connection with the lids, *e. g.*, they appear in the immediate neighborhood of the cornea. The gumma of the caruncle starts in the caruncular tissue proper.

The diagnosis of a gumma of the caruncle or conjunctiva is not at all difficult if the pre-auricular glands are enlarged and a history of a syphilitic infection or taint can be elicited. The gumma in either location responds readily to the specific treatment—another aid in diagnosis.

The following is the case of which mention has been made above: Mr. J. D., æt. 22, pugilist, was struck on the left temple during a "match." As a result, there was considerable swelling of the face and cheek of that side. Some few days later there appeared in the inner canthus of the left eye a small growth, with a mild chemosis of the lower conjunctiva. This tumor was lodged in the caruncle. About a week later he noticed that the upper lid was thickened, and on everting the lid and turning the eye down a small tumor was seen springing from the substance of the bulbar conjunctiva. Both tumors rapidly increased in size, so that within three weeks after being first observed the tumor in the caruncle was as large as a good-sized pea, while that of the upper conjunctiva was as large as a medium-sized bean. Both felt hard to the touch; no pain or discharge nor visual impairment was present. Almost synchronous with the appearance of the tumors, the pre-auricular and submaxillary glands became enlarged and painful. The conjunctival chemosis was very great and the conjunctiva rolled out in folds upon the lower lid to quite an extent.

This was his condition at the time he was referred to me. A few days later a superficial ulceration at the intermarginal edge appeared on the gumma springing from the bulbar conjunctiva; none was observed on the portion from the caruncle. The internal edge of the gumma from the upper half of the conjunctiva crowded underneath the caruncle gumma, yet no connection whatsoever existed. They remained throughout the course of their existence as two separate and distinct tumors. At first the patient vigorously protested against a specific infection, but after persistent inquiry and a thorough physical examination, a confession as well as undeniable stigmata were elicited. He had contracted syphilis five years previously. The right eye was normal and no other lesions than the ones mentioned were found in the left. He was given rapidly ascending doses of potassium iodide, the maximum daily amount being 200 grains. In addition, he received a drachm of mercurial ointment as inunctions per day and closely watched. After four weeks of this treatment, the gummata entirely disappeared, as did the preauricular and submaxillary swellings. At no time during the treatment were there any symptoms of iodine or mercurial poisoning.

The points of interest in this case may be given as follows:

1. The characteristic preauricular and submaxillary glandular swelling, developing pari passu with the gumma.
2. The distinctness of the two gummata.
3. The unusual size of the caruncle gumma.
4. The infrequency of gumma of the caruncle.
5. The usual time of appearance of the gumma, namely, five years after the initial syphilitic lesion.

The appended bibliography is well nigh complete with reference to gumma of the bulbar conjunctiva and caruncle. It also shows that a gumma of the conjunctiva has not been such an exceeding clinical rarity, while it does show the scarcity of gumma of the caruncle. Though the paper does not make any reference to chancre of the ocular conjunctiva, yet references thereto have been incorporated in the bibliography for the reason that a chancre is almost as rare as a gumma. The purpose of this is to show the relative frequency of these various syphilitic lesions of the conjunctiva.

BIBLIOGRAPHY.

[1]American Text-Book of Genito-Urinary Diseases, pp. 702-715.

[2]Barkan, A. American Medical Ass'n Journal, Jan. 7, 1899, p. 28.

[3]Benjamin, B. Contribution á l'etude Clinique des Gommes Syphilitiques de la Conjonctive. Paris, 1896.

[4]Bull, C. S. Gumma of the Conjunctiva. Jour. Am. Med. Sciences, 1878; Vol. 76, pp. 410-413.

[5]Briere. Syphilitic Lesion of the Ocular Conjunctiva. Annales d'Oculistique, 1874; Vol. LXXII., p. 105.

[6]Candron. Tumeurs Gommeuses de la Conjonctive. Rev. Gen. d'Ophthal, Paris, 1891; Vol. 145-150.

[7]Estlander. Ulcerated Gumma of the Bulbar Conjonctiva. Klin. Monatsbl. für Augenheilk, Sept., 1870.

[8]Faguet. Gomme Syphilitique du Tissu Cellulaire Sous-Conjonctival. Bull. Soc. d'Anat. et Phys. de Bourdeax, 1891; Vol. XII., p. 74; ibidem 254.

[9]France. Syphilitic Blotches of the Conjunctiva. Guy's Hospital Reports, 1861, p. 909.

[10]Galezowski. Wiener Klin. Rundschau, July, 1899.

[11]Hirschberg. Conjunctivitis Gummosa. Klinische Beob. aus der Augenanstalt, 1874, p. 25.

[12]Knies. The Eye in General Diseases. Text-Book, p. 412.

[13]Kerato. Conjunctivitis Gummosa: quoted in Annales d'Oculistique, 1863; Vol. I., p. 113.

[14]Lawford. Trans. Br. Ophthal. Society, 1890-1891; Vol. XI. Reviewed in Oph. Record, Vol. VII., p. 630.

[15]Libestanz. Uber Gumma der Bindehaut. Würzberg, 1886.

[16]Lee. E. G. Gumma of Ocular Conjunctiva. London Lancet, 1885; Vol. II., p. 803.

[17]Minor, J. C. Gumma of Ocular Conjunctiva. Arch. Ophthal, 1883; Vol. XII., pp. 228-230.

[18]Marlow. Chancre of Conjunctiva. New York Med. Jour., March, 1900.

[19]Marshall, Devereux. Trans. Br. Ophthal. Society, 1894; Ophthal. Record, Vol. VII., p. 630.

[20]Mauthner. Syphilitic Keratitis Punctata. Zeissl's Lehrbuch der Syphilis.

[21]Ring, G. O. Gumma of the Cornea. Ophthal. Record, Vol. VII., p. 199.

[22]Ramsey. External Diseases of the Eye. Text-Book, p. 31.

[23]Schmidt-Rimpler. Augenheilkunde. Text-Book, p. 430.

[24]Sulzer. Accident Syphilitique Primitif Simulant Conjonctivite Pseudo-Membraneuse Chez un Enfant. Io mois. La Clinique Ophthal., Dec. 10, 1899, p. 270.

[25]Sutter. Contribution á l'Etude des Affections Syphilitiques des Paupières.

[26]Silock. Trans. of Br. Ophthal. Society, 1890-1891; Vol. XI., p. 38.

[27]Smee. Conjunctival Blotches. London Med. Gazette, Dec. 13, 1844.

[28]Taylor. Gumma of the Caruncle. Jahrbuch für Augenheilhk., 1875, p. 452.

[29]Trousseau. Annales Dermat. et Syph. Vol. IX., No. 7.

[30]Transactions Georgia Med. Association, Vol. XXXIII., p. 156.

[31]Walker, LeRoy P. Gumma of the Conjunctiva. Med. Record, 1885; Vol. XXVIII., p. 573.

[32]Wecker. Traité des Maladies des Yeux, 1867, p. 177.

[33]Petit, J. Des Gommes Syph. de la Conjonctive. Bordeaux, 1893.

[34]Holmes, E. L. Chancre of the Conjunctiva. Chicago Med. Jour., 1885; Vol. L., p. 296.

[35]Burnett, Swan M. Norris & Oliver's System of Eye Diseases. Vol. III., p. 216.

[36]Weeks, J. E. Amer. Text-Book of Eye, Ear, Nose and Throat Diseases (DeSchweinitz and Randall), p. 300.

[37]Mazet. Du Chancre Syphilitique de la Conjonctive. Jour. des Maladies Cutanées et Syphilis, 1897, p. 1.

[38]Valud et Laur. Chancre Syphilitique de la Conjonctive Bulbaire. Annales d'Oculistique, T. CXVII., p. 280.

[39]Duboys. Chancre de la Conjonctive. Soc. d'Ophtalmologie de Paris, 1897.

PAMPHLETS RECEIVED.

"The Cosmetic and Visual Results in Squint," by J. M. Ray, M.D.

"Cleft Palate and Its Relation to Speech," by G. H. Makuen, M.D.

"Is Astigmatism, like Myopia, Ever Progressive?" by G. C. Pardee, M.D.

"Devitalized-Air-Toxæmia a Prime Cause of Tuberculosis," by Ch. Denison, M.D.

"The Relation of Out-Door Life to High Altitude Therapy," by Ch. Denison, M.D.

"The Diagnostic Importance of the Examination of the Feces," by Ch. D. Aaron, M.D.

CORRESPONDENCE.

WAS HELMHOLTZ THE ORIGINAL DISCOVERER OF OPHTHALMOSCOPY?

WASHINGTON, D. C., Feb. 26, 1902.

Editor AMERICAN JOURNAL OF OPHTHALMOLOGY:

Dear Doctor:—The chief and indeed the only point of difference between Dr. Theobald, so far as his recent contributions show, and myself, regarding the position of Helmholtz as the discoverer of ophthalmoscopy, seems to be this: Dr. Theobald esteems whatever was original in this discovery not to the credit of Helmholtz, and that whatever Helmholtz did was the result of a lucky chance and through a misconception of some law of optics, not clearly indicated; while I, in common, as I had supposed, with the whole of mankind informed on the subject, look upon Helmholtz as the sole author of the most brilliant scientific achievement of the century in which he lived, being, as it was, the outcome of a carefully wrought out theory based on the known laws of optics, which theory, when applied, proved in every particular its justification.

The reasons for my so thinking are, I believe, clearly set forth in my former communication in your journal. The authorities for my belief have been derived mainly from the very highest source—namely, Helmholtz himself, and not from his biographers or commentators, and I cannot but regard them as convincing to the unprejudiced.

As Dr. Theobald, however, is of the same opinion still and wishes for further enlightenment on some points, I have to beg your indulgence and that of your readers for a few additional lines on a subject about which there should be no two opinions among ophthalmologists of to-day.

Firstly, regarding the illumination of the background of the eye, which Dr. Theobald considers the "fundamental problem of ophthalmoscopy." It must be confessed that, in order for an object to be seen, it must be illuminated, and, further, in order that the eye be illuminated, it is necessary to bring into play the laws of reflection by reflecting surfaces and of the refraction of light by curved surfaces, all of which would take us back on these lines, for the real discoverer of ophthalmoscopy, to the region of very ancient history. According to this reasoning, Volta should be credited as the original inventor of the telephone and wireless telegraphy. To the discovery of the means of illuminating the bottom of the eye Helmholtz made no claim. He found it a part of the general knowledge of science when he came to teach physiology, dating back as far as Prevost's time in 1810, and he was familiar, as he has stated, with all the investigations on that subject from that time up "to 1847, when I began to search for the ophthalmoscope."* As he did not succeed in finally seeing the interior of the eye until 1850, it would seem that the lucky chance was considerably deferred.

"In my lectures," he says (*l.c.*), "I had to give an account of these investigations and try to give an explanation of the phenomena. I was obliged therefore to seek an explanation myself, and I may say that it was not difficult to find—at least for a man who had occupied his time with reading physics and chemistry and in making experiments as far as his scanty means would allow. Being acquainted with the principles of optics as far as they were then known, I proceeded to analyze the course of the rays of light in the experiment just alluded to and thus reached an explanation of the phenomena, the correctness of which was afterwards confirmed by the ophthalmometer."

Up to that time the illumination of the pupil had not been considered as of any scientific value, but, "as an entertaining experiment in a social gathering, and students had applied it to frighten young ladies."

Millions of people before Newton had seen an apple fall to the ground, but none had set himself to the task of finding out why it fell, and the law governing its falling. No one before Helmholtz had ever put the question to his mind why, if the light entering the eye serves as a source of illumination, cannot this light be used in such a manner as to produce optic images of the objects so illuminated? "All my predecessors," he continues, "had failed to put that question to themselves. They had stopped in the middle of their way instead of going on to the end." To repeat a paragraph quoted from him in my other paper: "The eye to be observed, having been rendered luminous, there was only a second condition to be fulfilled, namely, to make it possible for the eye of the observer to accommodate itself to the focal distance of the one to be observed." This is the original thought of Helmholtz, and of Helmholtz alone, and this is the sole basis of ophthalmoscopy. No one had ever before considered it necessary to regard the eyes of the observer and the observed as two optical instruments which had to be adjusted to one another, in order that distinct images should be formed on the retina of the observing eye. This was but an application of the well-established laws of optics as they presented themselves to his philosophic mind. "As soon as I had answered this question, I also saw how an ophthalmoscope could be constructed, and it took me only two days to do it and to successfully experiment with the new instrument."

---

*Address published in Med. Record, N. Y., Dec. 16, 1893.

[1] By which he means that the ophthalmometric measurements which he subsequently made, demonstrating the refractory power of the eye, substantiated the theory he had worked out as to the paths followed by rays of light emerging from the eye.

It will be observed from this account by the principal actor himself that the method followed was strictly philosophical. He first worked out the theory in accordance with scientific principles, then made an application of it by means of a mechanical contrivance and the truth of the conception was demonstrated. He did not accidentally discover that, by means of an instrument he happened to be using, he had an image of the background of the eye and then explained why it was so. As Prof. Hirschberg said at the celebration of the discovery of ophthalmoscopy, before the Medical Society of Berlin: "The matter of supreme importance was the exactness (Klarheit) of the theory. This up to the present time has remained absolutely unchanged. Of how many of the theories of 1850 can this be said?"

The second question that Dr. Theobald asks for solution is: If it was not through a misconception, what led Helmholtz to employ only concave lenses in his ophthalmoscope? To some who have not read Helmholtz's original monograph or who have read it and have stopped half way without going on to the end to find out what his purpose really was, it might seem perplexing that he should have used only the converging pencil of rays coming out of the observed eye, and the inquiry is not impertinent to the subject and is deserving of consideration. Helmholtz, though one of the most clear-minded of men, and the most simple and direct in his explanations, yet necessarily presupposed a modicum of knowledge and thought on the part of his readers. No one knew better, nor indeed as well, at that time, as he of the different paths rays of light might take in coming out of an illuminated fundus, depending, as they would, upon the point upon which the eye happened to be accommodated (*Adaptationsweite*).[2]

The "Adaptationsweite" was the basis of all his reasoning on the subject, and it was his knowledge of this fundamental fact, which all others had overlooked, that enabled him to find a law for a solution of the question in hand. For the simple application of this law, however, he chose to take only one kind—the converging pencil—because it was the one most commonly present either in the form of myopia or through the act of accommodation, but more largely probably because it was in keeping with the explanation he was endeavoring to make of the illuminated pupil and the reasons why, in these experiments, the fundus of an observed eye was not, under ordinary circumstances, visible. These reasons he conceived, and most rightly, to be the fact that the retina and the source of illumination were conjugate foci and the source of illumination was always at a finite distance. He therefore took as the point of adaptation a finite distance deliberately and not as a happy accident. This fulfilled the law as perfectly as either parallel or divergent rays. That we have taken parallel rays and an infinite distance as our standards at this day is merely a matter of more practicable adaptability and not because it is more scientific.

That the subject in all its bearings and possibilities in respect to the different refractive states of the eye was perfectly clear in his mind is shown in the short paragraph in which he outlines the whole question of the determination of refraction of the eye by the direct method of opthalmoscopy, to the theory of which we have added nothing from that time to this. After showing how it can be demonstrated that the distinctness of the image of the fundus changes with each adaptation of the observed eye for different distances, due to a change in its refractive condition, he says (page 38 of his original monograph):

---

[2] Helmholtz had to invent words to suit the new conditions he was dealing with, and it may be well to explain that he used the word "Adaptationsweite" in much the same sense we now use "far point" as the conjugate focus of the retina.

"Moreover it is possible, if deemed necessary, to easily determine objectively, by means of the ophthalmoscope, the existence and degree of near- and far-sightedness (Kurz- und Weitsichtigkeit) in the observed eye. The observer first examines a normal eye which he causes to fix objects placed at different distances and determines the concave glass which it is necessary to use for each degree of accommodation (Adaptationsstufen). In examining any other eye he then learns from the number of the concave glass, through which the retina is distinctly seen, the corresponding far point (Adaptationsweite) of the eye under observation." He then relates an instance in which he had determined a high degree of myopia in an amblyopic eye by this method.

All this seems so simple and easy to us now! And it is scarcely to be wondered at that there should be some who are ready to think that after all it didn't really amount to much in the way of originality, that it was a mere matter of accident or misconception of some sort, and that, because he didn't do it with a Loring ophthalmoscope with a full equipment of plus and minus lenses, he didn't fully realize what he was about.

Still I can not help but think that it is not altogether seemly in us, in the plenitude of our present knowledge and the plainness of the paths we now follow, to forget the trackless ocean upon which Helmholtz embarked on his voyage of discovery of the unknown land of ophthalmoscopy a half century ago, and to fail to honor him duly for his wisdom and his trust in the laws of physiological optics, which he perhaps more than any other one man has helped to establish for the sake of science and the benefit of humanity.

Yours very truly,

SWAN M. BURNETT.

MEDICAL SOCIETIES.

PROCEEDINGS OF THE OPHTHALMOLOGICAL SOCIETY OF THE UNITED KINGDOM.*

DAVID LITTLE, M.D., F.R.C.S.E., President, in the Chair.

Thursday, January 30, 1902.

DR. C. O. HAWTHORNE read a paper on intracranial thrombosis as a cause of double optic neuritis in cases of chlorosis.

SIR WILLIAM GOWERS thought that the evidence of thrombosis in these cases of chlorosis was very small indeed.

MR. JOHNSON TAYLOR asked Dr. Hawthorne how, if the cavernous sinus were thrombosed, it happened that there was no proptosis. He thought it more likely that it was due to some blood change.

DR. JAMES TAYLOR agreed with Sir William Gowers. Although the cavernous sinus might not be blocked, yet some of its tributaries might be, and this might account for the neuritis; but he thought that it was very difficult to see what caused it on both sides. Blocking of the arteries certainly did not cause it unless the embolus was septic.

MR. ERNEST JONES read notes of a case.

DR. HAWTHORNE, in reply, said that some chlorotic patients died who suffered from optic neuritis, and in these there was nothing but thrombosis present to account for it. He thought that the block need not necessarily be in the cavernous sinus, but if it were he should expect proptosis.

THE TREATMENT OF CYSTOID CICATRIX FOLLOWING CATARACT EXTRACTION.

MR. G. A. BERRY read a note on this subject. He said it was not always possible to prevent the formation of cystoid cicatrices after removal of cataract, and when they did occur they were a source of danger to the eye on account of the way they facilitated the entrance of micro-organisms. The author had found that it occurred in about 2 to 3 per cent. of cases operated upon. As a rule, the opening was very small, and could be seen readily if the conjunctiva were dissected up. For the treatment he preferred to dissect up the conjunctiva and turn it down as a flap, then with the cautery gently to burn the small opening, and at once replace the conjunctival flap. This always cured it, and he preferred this method to any other that had been introduced.

---

*British Medical Journal.

ENDOTHELIOMA OF ORBIT.

MR. SIMEON SNELL (Sheffield) related a case of endothelioma of the orbit, associated with a peculiar varicose condition of the vessels of the surface of the eyeball, occurring in a girl, aged 19. A marked feature was the varicose condition of the veins on the surface of the eyeball below, which had first been noticed about three months before the date of operation. There was also marked proptosis, the left eye being about a quarter of an inch in advance of the right. There was no œdema of the eyelids. The smooth surface of the tumor was felt in the floor of the orbit. Movements of the eyeball were normal except downwards, where there was some limitation. Vision was $^6/_6$. On October 28, 1901, the entire tumor was removed through an incision in the lower lid, without interfering with the eyeball. It had only loose attachments; it reached to the back of the orbit close to the under surface of the eyeball, and along the front part of the optic nerve. It was encapsuled, and measured an inch and a quarter long and about half an inch thick. The eyeball had since resumed its normal appearance, the varicose condition of vessels had disappeared, and vision was $^6/_6$. Mr. Treacher Collins examined the growth, and reported it to be an endothelioma.

RINGWORM OF THE EYELID.

MR. SIMEON SNELL related a case of ringworm of the eyelid in an adult, due to a large spored trichophyton, probably of animal origin, occurring in a healthy agriculturist, aged 34. He was first seen on December 17, 1901, with a large red patch on the right eyelid, which had commenced two weeks before as a rounded, brownish-red pimple on the skin near the outer canthus. It gradually increased in size, and now measured 2 inches by 1$^1/_4$ inch. It was oval in shape, with pustular points and well-defined edges. It involved the outer half of the upper eyelid, reached to the temple, embraced the outer commissure and the outer corner of the lower eyelid. The affected eyelashes and hairs of the eyebrow had fallen out or were loose. The preauricular gland and gland beneath the jaw were involved. There were six other lesions on the right forearm and two on the left. In all the patches there was marked loss of hairs. The patient kept cows, and one had on the left side a white patch without any hair on it for about two months. The ringworm apparently commenced on the right arm and the eyelid became affected by contact, the man working with his bare arms. Under the application of yellow mercurial oxide ointment improvement soon commenced, and on January 30th the patches on the arms had practically disappeared, and the one on the eyelid was only distinguishable by its greater redness. Under the microscope a large spored fungus was found, probably megalosporon ectothrix. Cultures from the hairs removed from the cow were not successful.

THE VISUAL PURPLE OF THE RETINA.

DR. F. W. EDRIDGE-GREEN read a paper entitled Observations on the Visual Purple of the Retina. The expenses of the research were defrayed by a Government grant of £10. He undertook the investigation in order to ascertain whether he could obtain any objective evidence of the diffusion of the visual purple into the yellow spot of the retina. Many phenomena pointed to this conclusion, such as the fact that a perceptible interval elapsed before people were able to see with the yellow spot, and that a light might fall on the fovea without producing any sensation. His first experiments were made with the help of Mr. Treacher Collins. On examining the retina of a monkey, it was at once evident that the visual purple extended to the yellow spot, but the very deep yellow of the spot prevented them from saying with certainty that the color altered on exposure to light. Mr. Treacher Collins and he had tried numerous chemicals in order to find out a substance which would fix the visual purple, but had not been successful. Nearly every chemical he used destroyed the purple. He then examined the eyes of two monkeys by himself, and tried to obtain an early view of the yellow spot of the retina through a microscope. It was at first red and then gradually bleached under the influence of light. He noticed a curious appearance in one retina; on examining the region just external to the yellow spot, he saw rose-colored cones surrounded by one or more circles of colorless rods. His last observations were made with the help of Mr. Devereux Marshall. Two monkeys were kept in a dark room for twenty-four hours, and then Mr. Devereux Marshall excised their eyes under chloroform, the room being illuminated only by a ruby light. The retina, having been arranged on a slide, was put on the stage of a microscope and viewed with a white light. The whole retina was bright crimson, but the brightest part of all was the yellow spot, and it could be seen that the visual purple was situated between and not in the cones in the rod-free district of the yellow spot. The visual purple in a few minutes bleached, leaving the yellow spot in its usual yellow color. Dr. Edridge-Green expressed his great indebtedness to Mr. Treacher Collins and to Mr. Devereux Marshall and also to Professor Starling for the use of his laboratory and the very admirable dark room at University College.

CARD SPECIMENS.

The following were shown: Mr. George Keeling: Unusual Refractive Change after Removal of a Congenitally Dislocated Lens.—Mr. H. R. Belcher Hickman: A Case of Retinitis Proliferans.—Mr. G. W. Roll: A Congenital Anomaly of the Optic Disc.—Mr. A. W. Ormond: A Case of Double Anophthalmos.—Mr. J. H. Parsons: Microscopic Sections of Pseudo-Glioma due to a Congenital Membrane.—Mr. Inglis Taylor: Fenestrated Metallic Balls Used by Professor Pflüger in Mules' Operation.—Mr. Holmes Spicer: A Case of Third Nerve Paresis with Argyll-Robertson Pupil and Marked Association of Convergence and Contraction of the Pupil.—Mr. R. Marcus Gunn: Unusual Deposit on Inner Surface of Each Cornea of Recent Origin and Slow Development.

ABSTRACTS FROM MEDICAL LITERATURE.

By W. A. SHOEMAKER, M.D.
ST. LOUIS, MO.

RESULTS OF X-RAY DIAGNOSIS AND OF OPERATION IN INJURIES FROM FOREIGN BODIES IN THE EYE.

William M. Sweet *(Phil. Med. Journal*, Feb. 1st), from a study of sixty-five cases in which he located a foreign body in the eye or orbit, by means of the Röntgen rays, draws the following conclusions:

1. The Röntgen rays offer the most certain method of detecting and locating foreign bodies in the eye.

2. The position of the foreign body should be determined in all cases before magnet extraction is attempted. Frequent insertion of the small magnet into the vitreous in the hope of finding the metal injures the eye and renders later attempts at extraction difficult, while the employment of the large magnet is not without danger when the position of the body is not known.

3. Early extraction offers the best chance of saving the eye. When the track of the body is through the cornea and lens, its position in the vitreous will indicate whether less damage will be done by removing the metal through the open entrance wound or through a new opening in the sclera close to the indicated position of the body.

4. The more extended use in the future of the larger magnet, in cases of steel in the vitreous chamber, to draw the metal to an opening in the sclera, after its position has been accurately determined, will probably achieve better visual results than have been obtained in the past with the small magnet introduced into the vitreous.

5. Iron or steel which has remained in the eyeball until a fibro-cellular covering envelops it cannot be dislodged with the magnet. Extraction with forceps, and the employment of normal salt solution to replace any vitreous lost, has resulted in several instances in eyeballs of good cosmetic appearance,

and is an operation worthy of trial. Forceps extraction must also be employed when the body is of copper or glass.

6. Extraction is a safe operation, and under proper precautions is free from the dangers of panopthalmitis or meningitis.

THE IDENTIFICATION OF CRIMINALS THROUGH THE FUNDUS OF THE EYE.

M. F. Weyman *(Journal of the American Medical Association*, Feb. 22) thinks that absolute identification can be obtained by a drawing of the papilla and the central portion of the retina. So great is the variety of the anatomical relations of the vascular twigs, that the author has never found two fundi alike.

REFLECTIONS ON OPHTHALMIC WORK IN THE ARMY.

John Grimshaw *(British Medical Journal*, Jan. 18) reviews his experience with recruits and makes the following suggestions:

1. Do not admit more ametropes by still further lowering visual tests unless prepared to correct their vision.

2. The examination of such ametropes by ophthalmic experts (civilians or military) and their vision and correction to be recorded on their medical history sheets. Such action would be necessary not only to treat the 'scrimshanking and discharge' stage of a soldier's *folie circulaire*, but to render easy the replacement of broken or lost glasses.

3. Opticians to be officially appointed whose duty it would be to keep an exact record of glasses supplied, to check the regimental data.

4. The distribution of recruits according to their sight to branches of service not necessitating keen vision or otherwise. If the visual tests were lowered, it would be of paramount importance to separate the 'hewers of wood and drawers of water' from the soldier who proposes to become a good rifleman, cavalryman, or artillerist.

5. To support discipline, and to lessen the responsibility of medical officers by inflicting summary punishment—by courtmartial and under the certificate of the ophthalmic

surgeon—on soldiers afflicted with *folie circulaire* of above type.

6. To encourage the correction of ametropia by granting spectacles to soldiers free of cost. I never could understand why free spectacles were given to South African invalids conditional on their discharge from the army. I should have thought that a non-discharge was a more rational condition. The War Office grants artificial teeth to men who are likely to become efficient soldiers and who are willing to remain in the army. Why not spectacles?

7. Official encouragement to R. A. Medical Corps officers to specially qualify themselves in ophthalmic work, such special qualifications to be rewarded with corresponding increase of pay.

8. The appointment of civilian consultants in certain military centers or districts to co-operate with the R. A. M. C. officers as occasion demanded or rendered desirable.

Special arrangement to be made whereby spectacles lost or broken can be replaced, and for ensuring suitable glasses being always available on occasions of need. This applies specially to men abroad or on active service.

PAMPHLETS RECEIVED.

"Anisometropia," by A. Duane, M.D.

"Dermoid Tumors," by V. D. Foster, M.D.

"The Diagnosis of Ocular Paralyses," by A. Duane, M.D.

"A Case of Unusual Tertiary Manifestations," by G. H. Makuen, M.D.

"Speech as a Factor in Diagnosis and Prognosis of Backwardness in Children," by G. H. Makuen, M.D.

"The Prevention of Blindness by the Adoption of Laws Compelling Hygienic Precautions," by D. V. Johnson, M.D.

"Miscellaneous Ruptures of the Choroid and Paretic Mydriasis without Paresis of Accommodation," by A. Duane, M.D.

"Empyema of the Right Maxillary, Ethmoidal and Sphenoidal Sinuses, with Sudden Blindness of the Left Eye; Operation; Recovery of Sight," by T. H. Halsted, M.D.

THE AMERICAN JOURNAL
OF
OPHTHALMOLOGY.

VOL. XIX. APRIL, 1902. No. 4.

ORIGINAL ARTICLES.

ON INTRAOCULAR EPITHELIAL NEWFORMATIONS.*

BY ADOLF ALT, M.D.

AFTER a previous article on the same subject in Vol. VI., *Archives of Ophthalmology and Otology*, I described, in 1880, in my book on the histology and pathology of the human eye (Lectures on the Human Eye), certain newformations which take their origin from the pigment epithelium of the ciliary body during a plastic cyclitis in the following words (page 106): "The whole layer appears very much thickened and grows into the cyclitic membrane in an irregular way. We, however, also observe frequently a more typical kind of proliferation of the cells of the uveal layer, in the shape of cylindrical tubes which grow into the cyclitic membrane and give off branches. In longitudinal and transverse sections these tubes appear like the glandulæ tubulosæ or the epithelial cylinders of an epithelioma. The cells of these tubes are either free of pigment or pigmented. Their shape and arrangement with their branches have given some authors (like Schiess-Gemuseus) the idea that they are blood-vessels whose walls are filled with pigment. * * * Not all the cells originating by proliferation from the uveal layer are pigmented, and I am even convinced that the young cells are at first always unpigmented, and form their pigment only later on." * * *

---

*Read at the meeting of the Western Ophthalmologic and Oto-Laryngologic Association, held in Chicago, April 10, 11 and 12, 1902, and illustrated by lantern slides.

And later on (on page 122), concerning the pigment epithelium of the choroid: "An undue and pathological newformation of cells is not infrequent in the pigmented epithelial layer (of the choroid). It is seen in nearly all cases of choroiditis. * * * The new formed cells (as already stated by Virchow) are at first nearly always free from pigment. They are, however, as it seems, able to form their pigment at any time themselves. The newformation may produce a simple thickening of the pigmented epithelium by superposing layer after layer of new cells. The formation of tubular offsets, similar to the epithelial cylinders of an epithelioma, appears, however, to be more frequent."

About a year previous to this I had also described (in Knapp's *Archives of Ophthalmology and Otology*, Vol. VI.) a tumor springing from the ciliary body and adjoining part of the choroid, which consisted of connective tissue very rich in cells in which pigmented and unpigmented cell-cylinders were imbedded.

Later on, when having studied a much larger number of eyes, I became convinced that the so-called pars ciliaris retinæ, that is the innermost covering of the ciliary body, consisting of one layer of unpigmented cells, may, and perhaps always does in these cases, also proliferate in the same manner as does the pigment epithelium, and that it may, furthermore, do so independently. The cells of the pars ciliaris retinæ may form new layers superimposed on the original one; or they, too, may form cylinders and cylindrical tubes, growing towards the interior of the eye, which seem to remain unpigmented or become pigmented at a very late date.

With these observations of mine the history of intraocular epithelial newformations, seems to have had its beginning.

Then came Treacher Collins' somewhat startling announcement of what he called the glands of the ciliary body. This name he gave to the pegs which spring *outwardly* from the pigment layer of the ciliary body, especially in its smooth portion. I am sure he is mistaken as to the special glandular character of these pegs. He spoke of the cell-cylinders I had described as if they were represented by these glands when they had become enlarged in pathological conditions. The proof he has not brought forward, and I have shown, in a paper entitled "On E. Treacher Collins' So-called Glands of the Ciliary Body" (in the January, 1896, number of the *American Journal of Ophthalmology*) that these pegs do not become enlarged in these cases spoken of, and that they may co-exist in an unaltered condition with the cell-cylinders which grow towards the axis of the eyeball from the two retinal layers of the ciliary body.

As a direct consequence of his views, Collins called the tumor just mentioned and formerly described by me an adenoma, which is perhaps correct, only with the understanding that Collins' so-called glands had nothing to do with its origin.

In 1898 and '99 I described a number of epithelial tumors, consisting of glandlike tubules containing an amorphous, coagulated, gelatinous substance, always found to affect one ciliary process only, and in one individual seen in both eyes, as adenoma of the ciliary body. I have now the sections of eight of such tumors in my collection. When I described these cases I thought none like them had been previously described. Yet I have since found that Pergens (in Vol. XXXII. of Knapp's *Archiv für Augenheilkunde*) had previously described an adenoma of the ciliary body which was probably the same kind of a tumor as mine, although the primitive drawing does not allow of a clear view; and, very soon after my publications, V. Hanke (in Vol. XLVII. of Graefe's *Archiv für Ophthalmologie*) described another such tumor, with a drawing which shows his case to have been an exact reproduction of my cases. He published it under the name of "An Epithelial Tumor of the Ciliary Body." Two similar cases, though not exactly alike, had previously been also described, one by Badal and Lagrange (*Archives d'Ophtalm.*, 1892) as a primary carcinoma of the ciliary body; and one by Michel (Graefe's *Arch.*, Vol. XXIV.), which he termed "a mixed endothelial and epithelial carcinoma," with its origin in the cells of the pars ciliaris retinæ. In Vol. XIV. of the Transactions of the Ophth. Society of the United Kingdom, J. Griffith described a case of primary melanotic tumor, consisting largely of epithelial cells, and considered it a carcinoma, in view of its malignancy.

In his book (Researches into the Anatomy and Pathology of the Eye, 1896) E. T. Collins reports "A Case of Primary Melanotic Glandular Carcinoma of the Ciliary Body," and a second one as "A Primary Tumor of the Ciliary Body Exhibiting Glandular Structure." And again, in 1899 (Transactions of the Ophth. Society of the United Kingdom) he, together with Mr. Snellen, reports "A Case of Intraocular Primary Carcinoma of the Eyeball."

In the same year, R. Schlipp reported a case from Prof. Fuchs' clinic (Graefe's *Archiv*, Vol. XLVII.) of "An Epithelial Tumor of the Ciliary Body." He says: "After the foregoing we have to deal with a primary tumor of the ciliary body which belongs to the group of epithelial tumors; yet we desist from directly calling it a carcinoma." In this case, as I am fortunate enough to see from some sections I owe to the kindness of Professor Fuchs, almost the whole of the interior of the eyeball is filled with epithelial cells. At the time when the case was described the patient was well, which did not seem to point to a malignant character.

In his exhaustive treatise (Traité des tumeurs de l'œil, de l'orbite et des annexes, 1901) F. Lagrange devotes a whole chapter to epithelioma and carcinoma of the ciliary processes and ciliary body, in which he refers to most of the cases here mentioned, and gives some beautiful illustrations of his own case. He takes issue with C. Emmanuel, who (Virchow's *Archiv*, Vol. CLXI., 1900) called Lagrange's case a glioma of the pars ciliaris retinæ, and in general seems to deny the probability of primary intraocular epithelial tumors. Lagrange, on the other hand, contends that Emmanuel's case of glioma of the pars ciliaris retinæ is in reality an epithelial tumor.

From the foregoing, I think there can be no longer any doubt but what epithelial newformations are found to spring from the two epithelial layers of the ciliary body and processes, and in rarer cases from the pigment epithelium of the choroid.

There is, furthermore, no reason why similar newformations might not take their origin from the epithelial covering of the posterior surface of the iris. Such an observation, and so far it seems the only one hitherto published, was made by Hirschberg and Birnbacher, who described a case of spongy carcinoma of the posterior layer of the iris (*Centrlbl. f. prakt. Augenhlk.*, 1896).

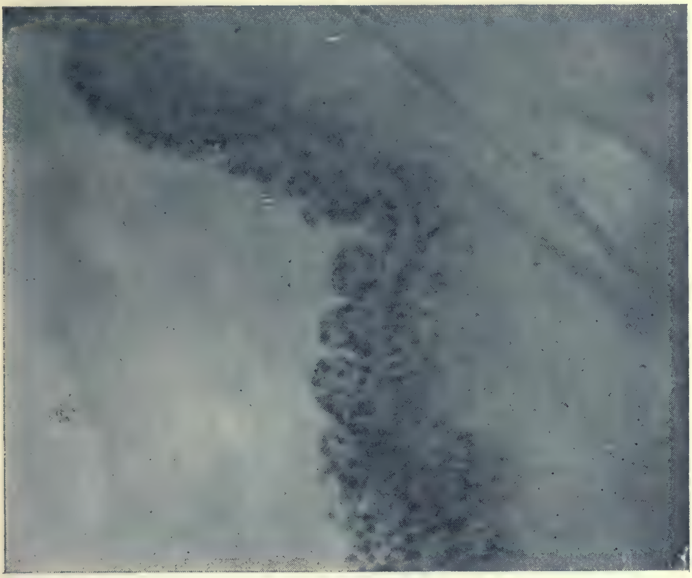


FIG. 1.

To the right pus ciliaries, to the left cell pegs.

When speaking of these newformations we must, however, not forget that their malignancy is as yet not proven, as only one patient, that of Griffith, died from such a tumor. On the contrary, the character of these tumors seems to be a benign one, and most of them have really been found accidentally, a number of them in injured and otherwise pathological eyes. The similarity to benign adenomata is frequently very apparent, as the cells of the pigment epithelium, as well as those of the pars ciliaris retinæ, seem to have a special tendency when proliferating, as I stated before, to form cylinders, which are solid or may be tubular in character.

After this introduction, I want to describe some more recent additional observations of my own on this subject and to illustrate them with lantern slides.

Before, however, going further I want to show you some lantern slides of the unbleached and bleached iris and ciliary body showing the epithelial covering of both and the pegs of epithelial cells which Collins called glands. You will readily see that these pegs are solid and have no central lumen, as Collins claims. I am happy, furthermore, to state that the specimen from which some of these photographs were taken by me comes from headquarters, from Collins' own laboratory. (See Fig. 1 and 2.)

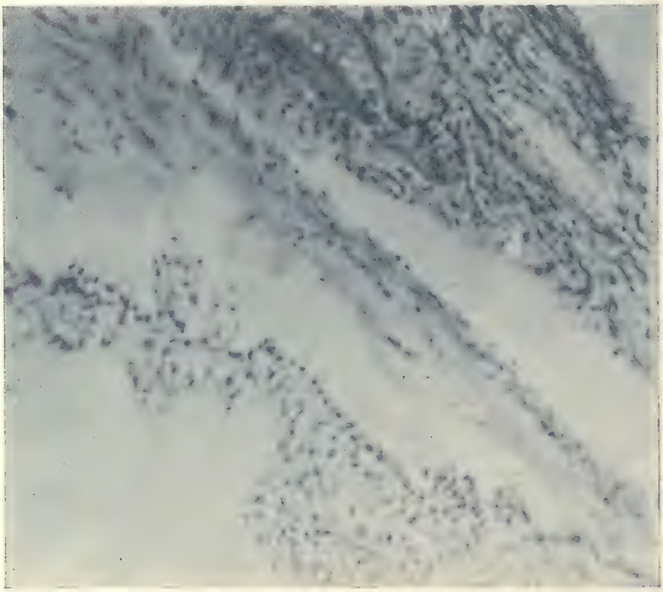


FIG. 2.
The cells in the lower part of the picture are the two epithelial layers of the ciliary body. Several pegs are easily distinguished.

The smallest epithelial newformations which I have found now and then lie on the ciliary processes, and they consist just of a few cells projecting into the interior of the eye from the pars ciliaris retinæ like microscopical buds. I have found these in a number of eyes, usually of old people. They were also present in the two eyes of one individual, in each of which an adenoma of one ciliary process was found, of which I shall show you some slides.

Sometimes the pars ciliaris retinæ—that is, the unpigmented epithelium covering the inner surface of the pigmented epithelium on the pars non plicata—is found to be

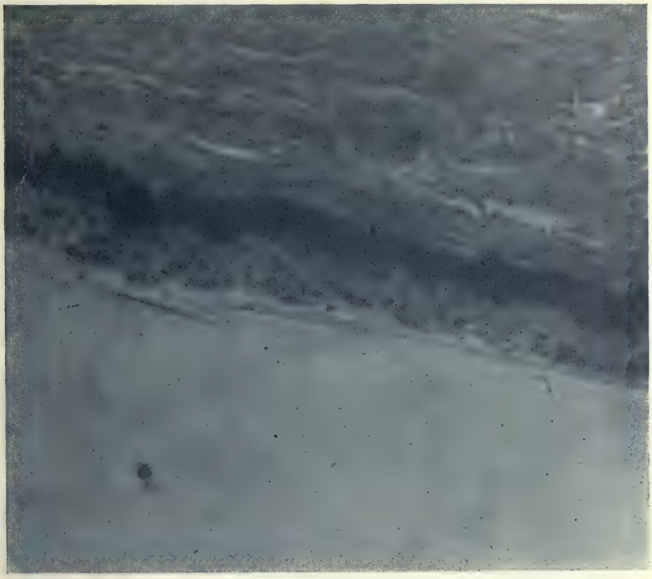


FIG. 3.

thicker than normal and to consist of several layers of cells instead of one. The arrangement of the cells is not as regular as in the norm, and forms wave-like projections into the interior of the eye. (See Fig. 3.)

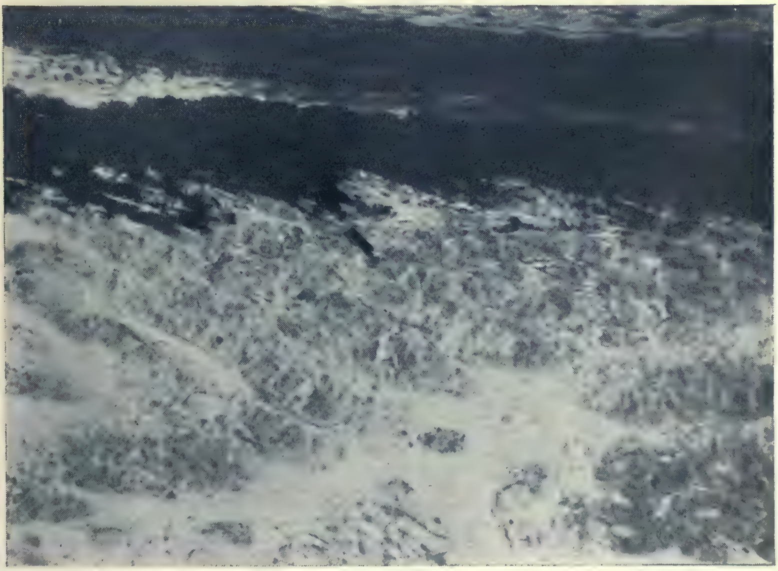


FIG. 4.

A further progress of such a proliferation is then seen in the formation of unpigmented tube- and cylinder-like projections, which may be quite numerous, and reach for quite a distance into the interior of the eye. (See Fig. 4.)

Similar cylinders and tubes may be formed by the pigment epithelium and may be partly pigmented, partly unpigmented. The slides to illustrate this are taken from the original newformation described by me and by Collins called an adenoma. (See Fig. 5.)

Thus far we have been dealing with newformations of the epithelial layers of the ciliary body and its processes, and I may state that they usually start just in front of the ora serrata.

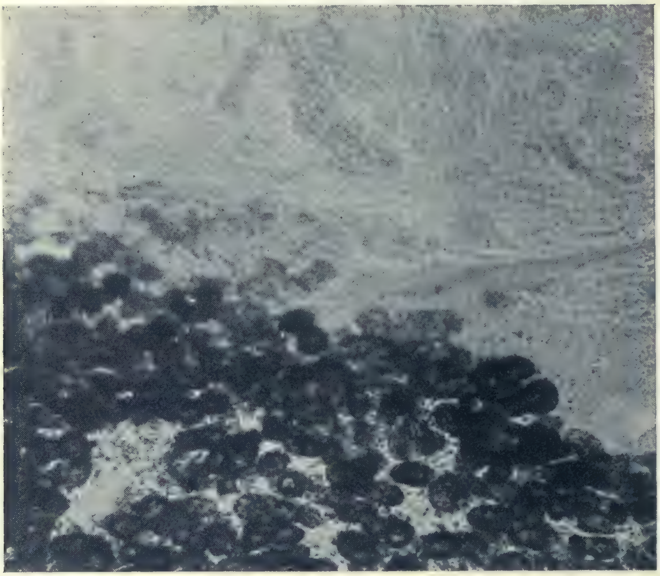


FIG. 5.

That the same or very similar changes may occur also in the pigment epithelium layer of the choroid, is not so well known, and the cases which I will show you have not yet been described.

First, in an injured eye with detachment of the retina and beginning ossification in the choroid, I found in the region of the posterior pole, inside of the almost normal one-cell layer of pigment epithelium, covering quite a large area, eight or ten rows of pigmented cells, with a small amount of

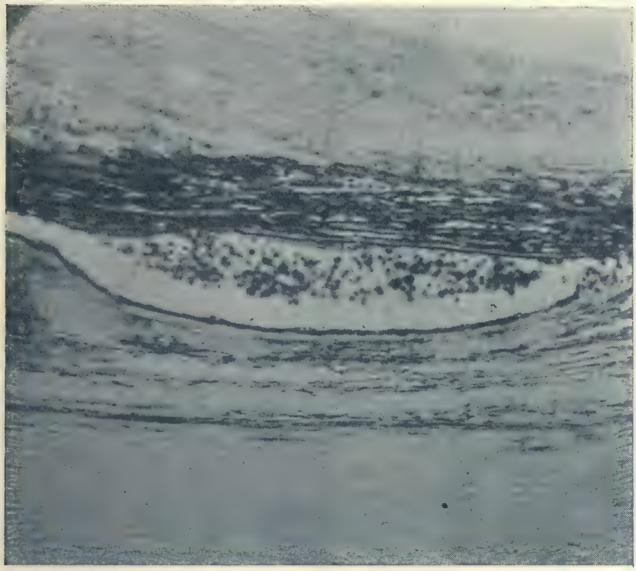


FIG. 6.

connective tissue intervening. These layers of pigmented cells were evidently proliferated from the normal pigment epithelium. This is an excellent sample of the superimposition of pigmented epithelial layers which I mentioned in the beginning of this paper. (See Fig. 6.)

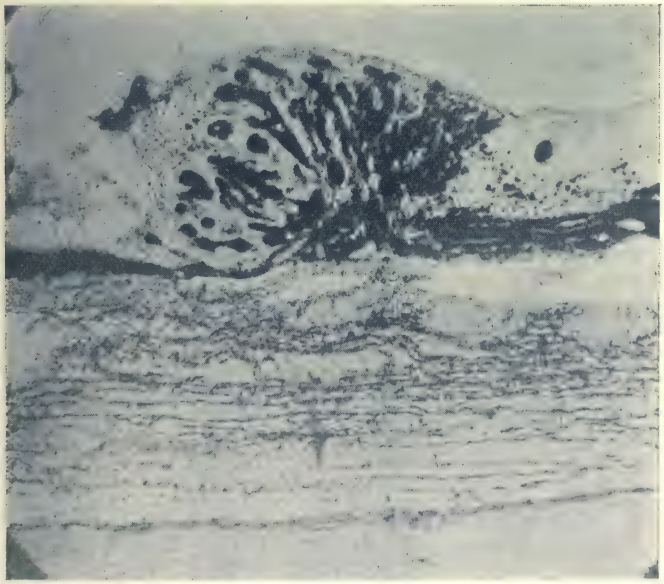


FIG. 7.

Second, a tumor-like newformation consisting of pigmented cell cylinders which spread fan-like from the pigment epithelial layer of the choroid near the equator of the eye into the interior. This new formation is very similar to the adenoma I found springing from the ciliary body. This eye had also been injured. (See Fig. 7.)

Third, in an eye with detachment of the retina and somewhat back of the ora serrata, I found a small newformation which consisted of some connective tissue and numerous cylinders of darkly pigmented epithelial cells. These cell cylinders lie inside of the lamina vitrea of the choroid and start directly from the pigment epithelium layer. In bleached sections the real nature of the pigmented cylinders, as being made up of epithelial cells, is easily distinguished. Furthermore, this newformation contains a number of bloodvessels, the origin of which I have, however, not been able to trace. (See Fig. 8.)

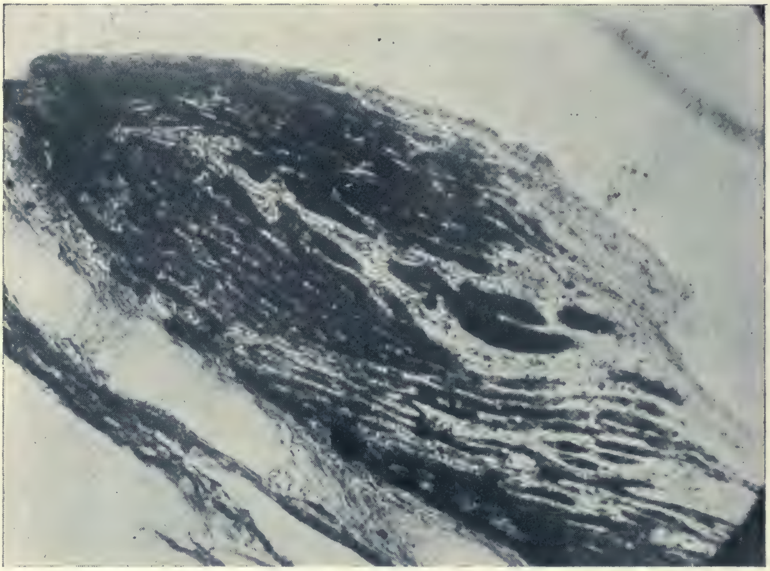


FIG. 8.

Fourth, is a very similar newformation in another eye with detachment of the retina. It lies also just backwards of the ora serrata. The direct connection of the pigmented cylinders with the pigment epithelium layer of the choroid is plainly seen in all sections.

Finally, I show you here what, as far as I know, is a perfectly unique observation, namely, a polypus-like epithelial tumor growing from the posterior surface of the iris backwards. It takes its origin with a thin pedicle, and resting, apparently, on a ciliary process, has grown there to an appreciable size. That it consists almost altogether of epithelial cells is plainly seen in bleached sections. This and Hirschberg's case of spongy carcinoma of the posterior surface of the iris are the only two known cases of iritic epithelial tumors, as far as I know. (See Fig. 9.)

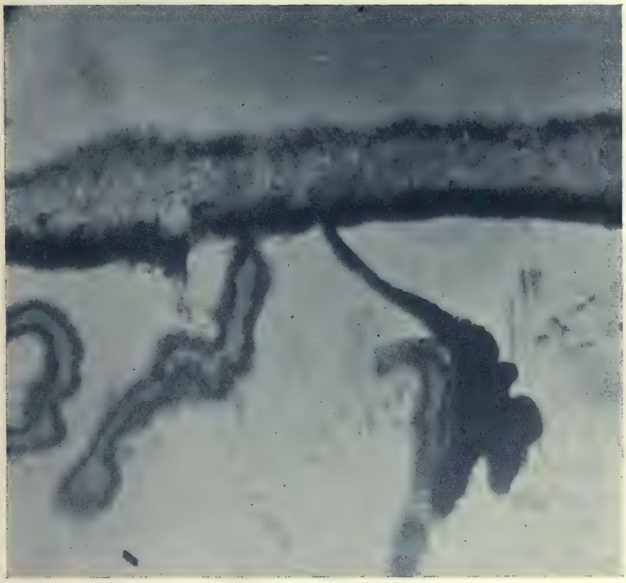


FIG. 9.

As I stated above, there can then be no more doubt, and I cannot understand why there ever should have been any, but that newformations of an epithelial character can and do occur primarily within the eyeball, and that the pigmented epithelial layer of the choroid, as well as the pigmented and unpigmented epithelial layers on the inner surface of the ciliary body and the two pigmented epithelial layers on the posterior surface of the iris, can give rise to such newformations. It is much more difficult to classify them. On the whole, however, they seem to be of a benign and some of them of an inflammatory character.

The metastatic secondary intraocular epithelial newformations are foreign to this paper.

CAVERNOUS ANGIOMA OF THE ORBIT.

By HARRY FRIEDENWALD, A.B., M.D.,

BALTIMORE, MD.

MRS. F., aged 24, was first seen July 7, 1893. She had had two children and one miscarriage. During the pregnancy with the last child (born nine and a half months before her visit) the right eye suddenly became prominent. There is no history of injury, and lues is denied.

The right palpebral fissure is about 3-4 mm. wider than the left, but she can close the lids tightly. The eye seems to be pushed directly forward. There is no lateral displacement and she does not complain of diplopia. The movements of the eye are normal. The eye cannot be pushed back. Vision of each eye is very good, about $^6/_{7.5}$. There is neither pain nor sensitiveness to pressure. The condition has not changed since it first appeared. The fundi of both eyes are normal. There is no enlargement of the retinal vessels in the right eye. The diagnosis was made of a tumor directly behind the eyeball. In order to eliminate the possibility of a gumma, iodide of potassium was ordered.

The patient was not seen again for two months. Early in September she returned stating that she had taken the iodide of potassium for many weeks without improvement.

The exophthalmus had increased, the eyeball was pushed far forward and somewhat downward. One could enter the fingertip between margin of orbit above and the prominent eyeball and feel a soft tumor deep in the orbit. The retina was congested and there was a slight neuritis. (Margin of disc blurred). Vision had sunk greatly. With the right eye she could now count fingers at but four meters.

Operation September 13, 1893: Under chloroform, an incision was made in the upper lid in the line of the fold, extending freely on both sides nearly to each canthus. It was then possible to separate the underlying tissues without very much cutting, and that mostly with the scissors, until the growth was reached. This was then freed carefully with a blunt grooved director in all parts so that the instrument could be swept freely around it. Then the growth was grasped with double-pronged tenaculum forceps, extracted *in toto* and without injury. The cavity felt smooth and bled freely; the wound was sewed with interrupted sutures and a bandage applied firmly to prevent hæmorrhage. The tumor was soft, dark-blue and apparently very vascular.

The patient made a rapid recovery. The sutures were removed at the end of one week. At this time there was considerable ptosis.

October 3d. Ptosis still marked. Movements of eyeball very good.

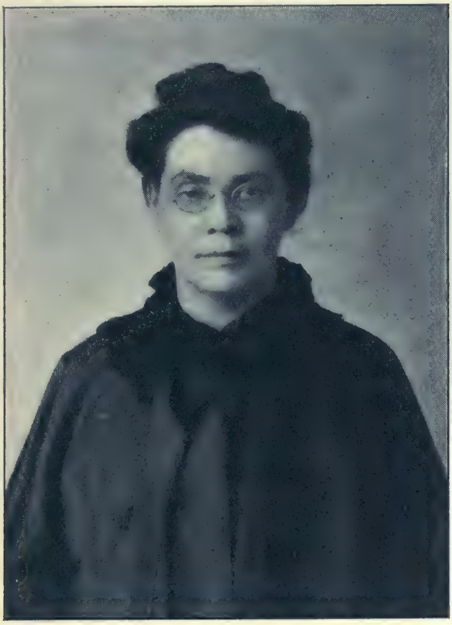


FIG. 1.

In July, 1899, the patient returned for the relief of the ptosis. A strip of skin was removed from the lid. The exophthalmus has disappeared entirely. There was no restriction of the movements of the eyeball, but slight ptosis. (See Fig. 1). Her sight has gradually improved.

August 16, 1899. $\begin{cases} \text{V. R. E. with } + 0.75 \text{ D. S., } {}^{18}/_{70}. \\ \text{V. L. E. with } + 0.75 \text{ D. S., } {}^{18}/_{20}. \end{cases}$

The right optic disc is paler than the left, but not distinctly atrophic.

The tumor was irregular in shape, measured (after hardening) 37 mm. in width, 23 mm. in height, and 28 mm. in depth, and weighed 19.30 g. Its surface is studded with small prominences. The accompanying photograph is life size and shows the upper aspect. (See Fig. 2). It is flattened below and in front through pressure against the eyeball. Histologically, it is composed of typical small and large cavernous spaces, separated by very thin partitions of connective tissues. The outer capsule is likewise very thin. The walls of the spaces have an endothelial lining. The contents of the spaces are for the most part blood corpuscles. At a number of points the corpuscles seem to have separated and leave a clear homogeneous mass. The hyaline bodies described by Knapp are seen at numerous places arranged in rows along the margin of a cavity.

The number of cases of cavernous angioma hitherto reported is not small. Panas, in his "Maladies des Yeux," in 1894, refers to fifty-four cases collected by Berlin up to 1880, and adds twenty-one, making a total of seventy-five cases to that date. Still, an affection which Knapp had seen but once in thirty-five years, is one of rare occurrence, and, as Knapp states, many of the cases above mentioned do not bear criticism as to diagnosis. I find a few cases reported since Panas collected his cases.*

In a few cases traumatism is mentioned as a possible etiological factor. In one (Copez and Depage), the exophthalmus came on suddenly during defecation and gradually increased.

---

*1. Feuer. Pest. Med. Chir., Presse, XXIX., p. 319. Reviewed in Nagel's Jahresber. for 1893, p. 458.

2. Tailor. (Univ. of Naples). Nagel's Jahresber., 1895, p. 191.

3. H. Knapp. Arch. of Oph., Vol. 25, p. 116, 1896.

4. Schrieber. (Bericht ueber Schrieber Augenheilanstalt in Magdeburg, 1896, p. 22). Nagel's Jahresber. for 1896, p. 446.

5. Neese. Arch. f. Augenh., Vol. 25, p. 9. Reviewed in Nagel's Jahresber. for 1897, p. 135.

6. Defrege. Rev. gen. d'Ophtal., 1898, p. 517. Nagel's Jahresber. for 1898, p. 591.

7. Usher. Brit. Med. Journal, 1898, p. 621.

8. Sokolow. From the Russian, Nagel's Jahresber. for 1898, p. 604.

9. Coppez and Depage. Soc. Med. Chir. du Brabant. Nagel's Jahresber. for 1899, p. 529.

10. Weiss. Muenchen. Med. Wochenschr., 1899, p. 1205.

11. Zimmerman. Ophth. Klinik., 1899, p. 202.

12. A. Knapp. Arch. of Oph., 1900, p. 141.

13. Bull. Trans. Amer. Ophth. Society, 1900, p. 27.

This case, however, differs from most reported in having been distensible and increased in size when the patient bent down, or blew up the cheeks. In the case reported above the tumor made its appearance during pregnancy.

The situation of the growth was in most cases within the muscular cone, a fact pointed out by Panas. The case described by us is an exception to the rule, the tumor having been found in the upper portion of the orbit, apparently outside the muscular cone; it was not necessary to sever the recti muscles during the operation.

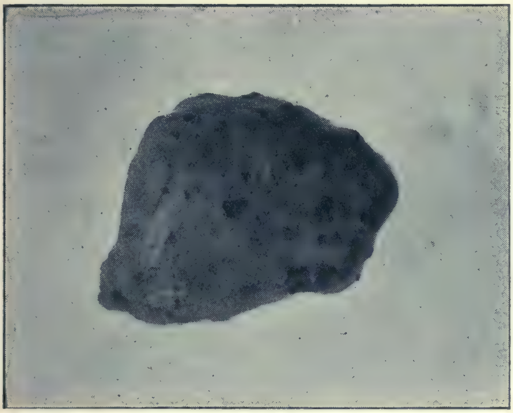


FIG. 2.

These tumors vary in size from that of a hazelnut to that shown in the accompanying illustration, and still larger ones are on record.*

The symptoms produced are slight. There is no pain and for a long time sight is unaffected. The exophthalmus is the most marked sign and this is developed gradually and in a direction almost directly forward. When the exophthalmus has become very marked, we find congestion of the optic nerve and retina, followed by optic neuritis or neuroretinitis and ending in optic atrophy. At the same time vision becomes reduced and often ends in complete blindness. These inflammatory changes of the optic disc and retina usually disappear rapidly after removal of the growth, and improvement of vision is noted in almost all cases. Thus, Sokolow reports that the eye, which at the time of the operation was blind, subsequently obtained vision $^1/_{10}$, and in the case of A. Knapp vision rose from $^4/_{200}$ to $^{20}/_{50}$. In the case reported above, vision rose from counting fingers at four meters to $^{18}/_{70}$.

---

*Neese described a tumor between five and six cm. in its longest diameter, and four and five cm. in its shortest.

Bowman, in 1859, first suggested the necessity of making the effort to remove circumscribed orbital tumors without sacrificing the eyeball, and H. Knapp first succeeded in preserving the eyeball through this operation by temporarily severing one of the recti muscles and thus gaining access to the tumor (1874). In this manner he removed a cavernous angioma in 1896. Knapp again called attention to the many cases in which the eyeball had been removed unnecessarily and to the importance of making an exploratory operation with the hope of saving the eyeball. In the case reported above, the removal was accomplished without difficulty through the narrow space between the projecting eyeball and the upper margin of the orbit, a pair of double tenaculum-forceps assisting greatly in the delivery.

Since Kroenlein described his method of removing orbital growths after temporary resection of the temporal wall of the orbit, several cases have been reported in which the operation has been applied with success to cavernous angiomata. (Sokolow, Copez, Weiss and A. Knapp).

Concerning the neoplasms, it may be stated that they have shown remarkable similarity of structure. Surrounded by a more or less dense fibrous capsule, the growth is made up of smaller and larger spaces filled with normal or disintegrated blood and separated by walls of connective tissue. The cavities have in many cases presented an endothelial lining, in others no endothelial lining could be found. (H. Knapp).

Hyalin bodies have been found arranged in rows along the walls of the cavities or filling an entire alveolus. (H. Knapp). The amount of fibrous tissue varies and has been found so abundant as to lead to the diagnosis of "fibrous angioma." (Neese).

A CASE OF LANDRY'S DISEASE, WITH INVOLVEMENT OF EYE MUSCLES.

By L. R. CULBERTSON, M.D.,

ZANESVILLE, OHIO.

I WAS called in consultation, April 29, 1901, with Dr. C. M. Rambo of this city in the case of Mr. E. N., age 30-35. The case presented the following history: Some ten days ago he went fishing on a warm day in April and sat on a cold rock for some time; later was caught in a light shower. That night he felt some rheumatic pain. Next day he went to his place of business (a bookkeeper), and while there staggered in walking as though drunk. He soon had to go home, and by evening could not move his legs. Next day he could not move his arms. After several days he was removed to the hospital. When I saw him symptoms were as follows: Complete motor paralysis below neck, sphincters retentive and bowels and stomach normal, slight enlargement of spleen, liver normal. Has anæsthesia on both sides of body, but scattered. Rt. gr. toe 8 lines, left 10 lines; dorsal rt. ph. first gr. toe 9, left do. norm. Dorsal foot rt. 20, left 16; Dor. prox. phal. 3 points felt at and beyond 3 lines, left ditto. Tip nose feels 3 points at and beyond three lines.

Tires easily when swallowing and in deep breathing. Cannot whistle, due to slight involvement of facial nerve. Sight, smell, taste and hearing normal. Has diplopia, and objects seen some six or eight feet apart. Esophoria 10°; L. H. 3°. The right abducens is paralyzed and slight paresis of rt. sup. rectus. No ptosis, subduction normal, superduction defective; dextroversion almost nil, laevoversion normal.

Pupils dilate normally to light, both by direct and cosensual reflex; contract sluggishly to accommodation.

Fundus R. E. disc pale and slightly hazy on inner half; veins very large and tortuous. L. E. disc hazy on outer half; veins enlarged and tortuous.

Has been taking bromides in large doses; cannot sleep.

We diagnosed Landry's disease (myasthenia gravis). He denies ever having had venereal disease and we can find no evidence of it, and he is a man of good habits; does not drink or smoke. Cannot ascertain if there is a tuberculous history. Never had rheumatism; had typhoid fever some years ago.

May 2. Can move his left arm above his head, and left leg slightly, but no motion on right side. Objects now seen on a level and 10° apart. Stop bromide and give strychnine and iodide of potash.

May 4. Consultation with Dr. Phillip Zenner of Cincinnati, O. Dr. Zenner, after a thorough examination, pronounced it a case of Landry's disease, with spinal complications, and said it was probably due to toxines in the blood, and as he had already made some improvement he might entirely recover.

Urine s. g, 1012,no albumen, chlorides 14%, phosphates 4%; two small hyaline tube casts found. Tube casts not found in later examinations.

Dr. Zenner advised that Dr. Rambo's treatment be continued and that electricity be used.

May 21. Can move legs and arms and no diplopia. All symptoms gradually disappeared. In June he could walk. While he was at his worst his fianceé came to him from California. About a month after his complete recovery he was married (though not by his physician's advice, as such a procedure might have proven disastrous), and went with his bride to California to reside. He is reported as being quite well and never had any return of the disease.

THE MANNER OF MAKING AN IRIDECTOMY IN ACUTE GLAUCOMA.

By SWAN M. BURNETT, M.D., Ph.D.,
WASHINGTON, D. C.

CONFESSEDLY the making of an iridectomy in acute inflammatory glaucoma by the classical and usually followed methods of opening the anterior chamber is the most difficult operation in eye surgery. These methods, as they are recommended in the text-books, consist either in the use of the triangular knife in the usual way for making an ordinary iridectomy, or the Graefe knife with a puncture and counterpuncture, as in the operation for extraction of cataract.

When the anterior chamber is abolished, or practically so, and the iris has been reduced to a narrow rim, or, may be, lost sight of under the scleral edge of the cornea, these procedures are either impossible or, at the best, fraught with the greatest danger to the lens.

Some seven years ago, having an extreme case of this kind to deal with, it occurred to me that a happy turn out of the difficulties would be to adopt a modification of the incision which all the old followers of the Moorfield's clinic will remember as the Streatfield incision for cataract extraction. This consists in opening the anterior chamber with the point of a cataract knife, held at right angles to the surface of the ball, and following the curve of the base of the cornea for the extent of the opening desired. The modification of this which suggested itself to me was to make an opening into the anterior chamber from without, by successive strokes with the point of a Graefe knife, following the curves of the corneal base as far behind the clear cornea as was desirable for the most peripheral position of the wound. The essential idea is to cut the layers at the sclero-corneal junction as evenly as possible throughout the whole extent of the incision. The bottom of the wound thus carefully made finally gives way at some point, and through this opening there is a gush of aqueous and usually a prolapsed iris. A triangular knife with a bulbous point (which I obtained in Paris, and was, I believe, designed by one of the Parisian ophthalmologists) is then introduced into the wound and the section of the already thinned tissue completed by the sharp sides of the knife. The bulbous point protects the lens and cornea from any injury. A short, thin, straight knife with a bulbous point can also be used for the same purpose, or even a blunt-pointed scissors in the absence of the more suitable means. The iris now usually occupies the opening and is seized with the forceps and cut in the usual way.

The high tension of the globe renders the making of the incision up to the time of perforation extremely easy. The bleeding, which might obscure the field of operation, can be done away with by the use of the suprarenal solution.

If so desired, it is possible to construct a special knife for making the incision. It would be in the form of a hatchet, with a slightly rounded cutting edge of 3 or 4 mm. length. I have found, however, a rather short, stout Graefe knife quite sufficient.

I can hardly believe that so simple and rational a procedure should not have occurred to other operators, and possibly many others are practicing it to-day; but it has not found its way into our principal text-books, nor, so far as my research goes, into periodical literature.

All of my confréres with whom I have discussed the subject have declared it to be novel, and some have made an application of it in their difficult cases with much satisfaction.

But, whether new or old, it is a method, which from my experience in a number of cases, I believe has such merits as to warrant a much wider employment than it seems to have, and I can cordially commend it for trial.

THE seventh meeting of the Western Ophthalmologic and Oto-Laryngologic Association was held in Chicago April 10, 11 and 12. It was a very enthusiastic, socially brilliant and scientifically most enjoyable and useful meeting. The officers elected for the ensuing year are: W. L. Ballenger, Chicago, President; J. O. Stillson, Indianapolis, First Vice-President; J. M. Ray, Louisville, Second Vice-President; E. Pynchon, Chicago, Third Vice-President; D. T. Vail, Cincinnati, Secretary, and O. J. Stein, Chicago, Treasurer.

CHANCROID OF THE EYELID.

Mathias Lanckton Foster (*New York Medical Journal*, March 15th) reports a case in a man, 30 years of age, who, one month previous, contracted a sore on his penis, which was followed by suppurating buboes in the groin. The upper lid was swollen and red; the ulcer was elliptical, its edges abrupt and elevated, but not indurated; its floor was excavated and covered with a purulent detritus. The venereal sore most frequently met with in this location is the chancre. The author has been unable to find, in medical literature, a case reported in which chancroid of the eyelid was even suspected.

MEDICAL SOCIETIES.

PROCEEDINGS OF THE OPHTHALMOLOGICAL SOCIETY OF THE UNITED KINGDOM.*

W. ADAMS FROST, M.D., F.R.C.S., Vice-President,
in the Chair.

Friday, March 14, 1902.

SYMMETRICAL CONCENTRIC FOLDS OF CHOROID AND RETINA IN FOUR CASES OF UNUSUALLY HIGH MYOPIA.

MR. LAWFORD KNAGGS (Leeds) read this paper. The appearance presented was that of a crescent having a sharp dark edge. It was always situated on the nasal side of the disc and at varying distances from it, and when both eyes were affected the condition was symmetrical. It was vertically placed, and its concavity faced the disc. It was two, three or four times the diameter of the disc in height. The condition producing this appearance was a folding back of the choroid and retina upon itself towards the disc; in other words, there was a detachment of both tunics from the sclerotic. The dark edge was due to the increased thickness of pigment at the summit of the fold where it turned round upon itself. Vessels curved round the fold as round the edge of a glaucoma cup. The appearance had been met with in four cases. Both eyes were affected in three, and in the other one eye had been lost from accident. The measure of the myopia varied from —18D to —38D, neglecting astigmatism. In one eye there was a rent on the anterior surface of the fold through both tunics showing the sclerotic, and the edges were turned towards the vitreous. In another there was a wrinkling of both coats on the nasal side of the crescent and parallel to it. In Haab's *Atlas* (edition 1901, Fig. 79) a very similar appearance was shown, but was described as true staphyloma in a highly myopic eye. The explanation was probably this: The anterior attachments of the choroid and retina, stretching unduly in consequence of the elongation of the eyeball, permitted the two inner tunics to slide back towards the posterior pole; but, as they were both nailed to the sclerotic by the optic nerve, the sliding movement was checked by the obstruction, and led to a reduplication of the coats within the area over which the obstruction was felt.

MEMBRANOUS CONJUNCTIVITIS.

MR. W. H. H. JESSOP read notes of thirteen cases treated as in-patients at St. Bartholomew's Hospital. All had adherent membrane, which left a raw surface when stripped off. Eight had the Klebs-Loeffler bacillus, giving the characteristic reactions. From a culture of three of the cases guinea-pigs were inoculated, causing death in forty-eight hours, and showing necrosis of tissue at the seat of inoculation and inflamed suprarenals. There was also enlargement of the neighboring lymphatic glands. The temperature was over 100°; albumen was present in the urine, but only one case had membrane in the fauces. In no case was there paralysis or paresis of the soft palate nor absence of knee-jerk. The other five cases were tested several times for the Klebs-Loeffler bacillus, but without success. Two had streptococcus pyogenes, two had staphylococcus albus, and one staphylococcus aureus. None had albuminuria, only two had raised temperature, two had enlarged glands, but none had membrane on the fauces. The diagnosis between diphtherial and non-diphtherial membranous conjunctivitis could only be made bacteriologically. In these cases the clinical evidence of albuminuria, raised temperature, enlarged glands, and signs of general diphtheria, was a great aid in diagnosis. It was thus proved that all cases of membranous conjunctivitis were not diphtherial, and that the type of severe diphtherial conjunctivitis mentioned in textbooks was rarely seen. The term "membranous conjunctivitis," which was convenient, must be enlarged to include cases due to diphtheria and other organisms.

DIPHTHERIA OF THE CONJUNCTIVA.

MR. SYDNEY STEPHENSON communicated notes of forty-three cases of conjunctivitis in which diphtheria bacilli were found. The cases formed 1.25 per cent. of the ophthalmic patients seen in two hospitals for children. The average age was 26.7 months, but 88 per cent. occurred in children under four years. The cases chiefly occurred during the first four months of the year, and often there was a history of exposure to diphtherial infection; 40 per cent. of the children were bodily ill, although the series included but three examples of really severe diphtheria of the conjunctiva. In five cases there was albuminuria, while in two cases the knee-jerks were absent. Diphtheria of the fauces or nose preceded the conjunctival affection once, was associated with it twice, and followed it once. Diphtheria of the skin was present in seven children. The preauricular and other glands were generally enlarged. The malady was unilateral in about three-quarters of the cases. Death occurred once. The infection was "pure" in 13.93 per cent. and "mixed" in 36.04 per cent. of the cases. As regarded treatment, Mr. Stephenson advised liberal and early doses of antitoxin, with 1 in 5,000 solution of corrosive sublimate applied to the conjunctiva by means of a small spray. He concluded that "croupous" and "diphtherial" conjunctivitis were clinically and bacteriologically one and the same disorder.

After remarks by Mr. Bewerton and others, Mr. Jessop and Mr. Stephenson briefly replied.

CARD SPECIMENS.

The following card specimens were shown: Mr. G. Hartridge: (1) Ectropion of Uvea; (2) A Large Papilloma of the Conjunctiva.—Mr. H. Work Dodd: (1) A Museum Specimen of a Very Large Melanotic Sarcoma of the Orbit, which had probably commenced in the choroid, and which had come through the globe and had entirely covered it; it was removed on account of pain, but the patient died shortly afterwards from secondary growths in the liver, kidneys, brain and glands; (2) Calcareous Tumor of the Orbit.—Mr. J. Herbert Fisher: Retinitis Circinata.—Mr. J. H. Parsons: (1) Degeneration of the Retina; (2) Arcus Senilis.—Mr. Lawford: Early Changes in the Retina Following a Blow; these changes were present within ten days of the injury.—Mr. R. E. Bickerton: Unusual Changes in the Choroid.

ABSTRACTS FROM MEDICAL LITERATURE.

By W. A. SHOEMAKER, M.D.
ST. LOUIS, MO.

PROTARGOL; ITS EFFICIENCY IN OPHTHALMIA NEONATORUM AND TRACHOMA.

J. Lawton Hiers (*Georgia Journal of Medicine and Surgery*, Jan.) reports cases and makes the following deductions:

1. On account of its non-coagulability of albumin and albuminous products, and the facility with which it can be indiscriminately combined with the alkalies and local ocular anodynes, protargol possesses a marked advantage over silver nitrate.

2. As contrasted with the latter in the therapy and prophylaxis of gonorrheal ophthalmia, protargol does not undergo chemical changes nor decomposition; and is advantageous in that its action is non-caustic and unirritating.

3. The harmlessness of protargol renders its application easy and safe.

4. Protargol, while exercising remarkable penetrative power, will not stain the mucous membrane nor sear the tissue.

5. Its penetrability enables it the better to undermine and eradicate diseased conditions; which faculty, in a measure, is denied nitrate of silver, on account of the pseudomembrane eventuating from its application.

6. For general prophylaxis simple washing of the eyes with protargol is sufficient; but where gonorrheal infection has been proven, or is suspected, instillation is indicated.

7. As a routine measure, washing the eyes with protargol should be made obligatory in private obstetrical practice.

8. Protargol should be advocated and substituted for silver nitrate in clinics. It possesses all of the advantages with none of the disadvantages of its silver salt.

9. Protargol is reliable, safe, certain and quick in the

therapeutics of ophthalmia neonatorum and trachoma if used in sufficient strength and with proper frequency.

10. In my practice and experience it has proved itself the remedy par excellence in those conditions in which its employment has been indicated.

TUBERCULOSIS OF THE EYE.

Allen J. Haight (*American Medicine*, Feb. 8) has collected 308 published cases of tuberculosis of the eye, and reports 4 cases of his own, making a total of 312. The iris was the seat of the disease in 121, the choroid in 93, the conjunctiva in 57, the ciliary body in 13, the cornea in 11, the lachrymal gland in 8, the retina in 4, and the optic nerve in 2 cases.

Of 118 cases in which only one eye was affected, the disease extended to the other in about 60 per cent, and in about 40 per cent. the vision was entirely lost. In 86 cases no history could be obtained. General tuberculosis occurred in 60 per cent.

Fifty-eight cases were primary, no other part of the body being affected. Of these, 37 were reported due to injury; in 21 no cause could be discovered; and in 7 the affection extended to the other eye.

One hundred and twenty-two gave a history of hereditary tuberculosis, and in 105 no cause could be discovered.

The author thinks many more cases of primary tuberculosis are due to injury than is generally supposed. He refers to the experience of Peters in a hospital at Bonn, where, of 1,000 injured, at least 500 developed tuberculosis at the site of the injury. He agrees with Peters, "that there is no organism which is so likely to take root and grow at the site of the injury as the tubercle bacillus, and that irritation of the ciliary nerve brings about favorable conditions for colonization and multiplication of this ubiquitous bacillus." He further asserts that "many cases of chronic insidious iridochoroditis with blindess and lowered tension, following injury or an operation, may rest upon a tuberculous basis."

In view of the fact that about 50 per cent. of all the cases recorded in literature (in which ophthalmic tuberculosis was the cause of death) were complicated by acute or chronic tubercular meningitis, the author believes that the majority of cases of tuberculous meningitis are due to ocular tuberculosis, and thinks many lives could be saved by the prompt enucleation of the infected organ.

Before describing the way in which tuberculosis manifests itself in the various tissues of the eye, he refers to the four points laid down by Ludwig Bach:

1. Tuberculosis of the eye is by no means a rare affection.

2. All parts of the eye may be attacked by the disease.

3. It plays a particularly important role in the diseases of the uveal tract.

4. The diseased eye may be the earliest and only manifestation of the tuberculous infection.

The ophthalmoscope shows the deposits as whitish or yellowish-white spots. The single deposits are sometimes so small that they are not visible to the naked eye. They begin in the chorio-capillaris, and advance first towards the retina, and later encroach on the sclera. The iris is the most frequent starting point of tuberculosis. The clinical appearances of tuberculosis of the iris are not always the same, and a diagnosis is at times very difficult.

Machek differentiates, anatomically, three forms:

1. Tuberculous infiltration.

2. Disseminated tubercles.

3. Conglomerated tubercles.

Vignes makes the following points:

1. It is important, from a clinical point of view, to differentiate a tuberculous variety of iritis.

2. This form of inflammation is premonitory of the tuberculous nodular eruption, which it may precede by several weeks.

3. It is characterized by its subacute mode of invasion; its evolution is slow and torpid, being marked by faint reactional signs, although in addition there may be dense synechiæ more or less completely obstructing the pupil.

4. The absence of pathognomonic symptoms renders the diagnosis difficult.

5. The tendency to spontaneous cure of miliary tuberculosis depends upon the individual resistance, and especially upon the resistance of the iris.

After a thorough study of eight cases of tuberculosis of the choroid, George Carpenter thinks that tubercles of this tissue are protein in their characteristics, and we must be prepared to find them under various guises.

Wagenmann says tuberculosis of the choroid can be distinguished from glioma of the retina by the early appearance of inflammatory symptoms, including iritis—phenomena which are not present in this stage of glioma.

The author agrees with Fuchs that tuberculosis of the conjunctiva occurs almost without exception in young people, generally attacking only one eye, although both are occasionally involved.

Sattley, in 1891, classified conjunctival tuberculosis clinically as follows:

1. Characterized by the presence of small miliary ulcers, which later on may coalesce, generally attacking the palpebral, but sometimes affecting the bulbar conjunctiva.

2. Characterized by the presence of greyish or yellowish subconjunctival nodules, varying in size, but rarely larger than a hempseed, not unlike the sago granule of trachoma.

3. Characterized by the presence of florid hypertrophied papillæ and rounded outgrowths or granulation tissue, springing from the palpebral conjunctiva or situated in the fornices, and which soon recur after removal (resembling in many respects the velvety granulations present in a tuberculous arthritis). These granulations are accompanied by edema and thickening of the lids.

4. "Lupus" of the conjunctiva, characterized by numerous pedunculated, cockscomb-like excrescences in the fornices, of a jelly-like consistency, often showing more or less extensive ulceration.

5. To the above four groups one more should be added, in order to embrace those cases which are characterized by the existence of distinctly predunculated tumors, having the macroscopic appearances of ordinary papillomas, and also such as those designated by Mitvalsky as "true polypus of the conjunctiva"—cases in which there is no involvement of the subconjunctival tissue, nor the production of any subjective symptom other than slight inconvenience due to purely mechanical causes.

"Hirschberg estimated tuberculosis of the conjunctiva at 1—6,000; Mules, 1—3,000: Eyre, 1—3,000."

Tuberculoses of the lachrymal gland, lachrymal sac, ciliary body, cornea, and of the nerve are discussed.

The bibliography of the subject is given.

MALARIAL IRITIS: REPORT OF A CASE.

Sidney D. Jacobson's (*American Medicine*, Feb. 8) case was a female, aged 22, who consulted him on account of pain in her eyes, headache, chilly sensations, malaise, and loss of appetite. Examination showed a mild iritis in both eyes; temperature 101°. Inasmuch as syphilis and rheumatism could be excluded as a cause of the iritis, the author made an examination of the blood and found the malarial organism of the tertian type. Fifteen grains of quinine were given every four hours, and a one per cent. solution of atropine used for the eyes twice daily. Under this treatment the iritis very promptly improved and the constitutional symptoms disappeared.

The author reviews the literature of the subject and finds that malarial iritis is a very rare disease. A great many of the best authors make no reference to it at all. Jacobson refers to an editorial in the *Journal of the American Medical Association* (1896, Vol. XXXI., p. 1118), which gives an excellent review of the subject, and quotes from Yarr, as follows;

"Among the most common external signs of malarial eye diseases are probably serpiginous ulcer of the cornea, phlyctenular keratitis and an herpetic eruption of the upper lid and supraorbital regions. Yarr thinks all malarial eye diseases have their starting point in disturbances of circulation, and classifies them under the following heads: Neuritis, hæmorrhage into the retina, retinochoroiditis, effusion into the vitreous. One sign is said to be pathognomonic—namely, a peculiar coloration of the papilla (*tinte rouge grisâtre*). This is due to the presence of malarial plasmodiums in the capillaries. It is stated that 80 per cent. of the cases terminate in a partial atrophy, indicated by a varying diminution of visual acuity, irregular contraction of the field and slight greyishness of the disc; many end in complete recovery; some rare cases go on to complete atrophy. Retinal hemorrhage may be punctate or severe; in the latter case it may cause complete blindness. Among occasional ocular troubles, due to malaria, may be mentioned periodic blue vision, central scotoma, sudden and persistent amaurosis which may end in atrophy. A note of warning is also sounded regarding the danger of inducing amaurosis by the use of quinine."

Yarr further says: "There are grounds for believing in the existence of a special malarial iridocyclitis characterized by periodicity and a tendency to relapse."

Again, Yarr arranges malarial eye diseases under the following headings:

Conjunctivitis.—(a) Intermittent ophthalmia; (b) conjunctival injection due to neuralgia of the fifth nerve; (c) epidemic conjunctivitis; (d) epithelial xerosis, probably secondary to malnutrition brought about by malaria, this being the local expression of the general disease,

Keratitis.—(a) Dendritic; (b) keratitis profunda; (c) vesicular keratitis (herpes corneæ).

Iritis.—Recorded cases of malarial iritis are not numerous, and in very few is the evidence of malarial origin perfectly satisfactory.

PROGRESSIVE MYOPIA.

Priestly Smith, in discussing progressive myopia at the annual meeting of the British Medical Association, draws the following conclusions:

1. *Age.*—The younger the patient when the myopia develops, the more likely it is to increase. The majority of cases come to a standstill between the ages of fifteen and twenty-five.

2. *The Degree of Myopia.*—The higher it is, the more likely it will be to increase. A child who has 10 D. when ten years old is likely to have 20 D. when ten years older.

3. *The State of the Choroid.*—The higher degrees are to be feared less than the lower, if in the latter the choroid and retina are affected. We first get the typical crescent which may lead on to thinning of the choroid and changes at the macula. The congestion and abnormal conditions soon lead to yielding of the sclerotic and a rapid increase of the myopia.

4. *Constitutional Changes.*—These are of the utmost importance, as myopia frequently follows grave constitutional disturbances and diseases causing high arterial tension.

5. *Evidence of Heredity.*— This is sometimes very marked and as a rule in these cases, although the degree may be high, yet fundus changes are not so frequently met with, and therefore with a strong family history the prognosis is, as a rule, better.

6. *Occupation.*—This is of great importance. Excessive close work develops or aggravates it, and a person developing the disease should never be put to work necessitating this, at least not until any tendency to increase has been checked.

THE HAAB MAGNET.

Frank Van Fleet (*Post-Graduate*, January) says:

All other conditions being equal, the chance of removing a piece of iron or steel from the interior of the eye and saving the eye will be inversely as the interval between the injury and the time the magnet is applied.

An eye which is to be subjected to the magnet should be prepared as carefully as if one were about to extract a cataract.

The chance of recovery is better, and the possibility of sympathetic trouble in the fellow eye less, if the point of penetration of the foreign body does not involve the ciliary region.

The point of the magnet need not necessarily be placed at the center of the cornea, as recommended by Fuchs. Indeed, it is better to place the point of the magnet over the wound through which the foreign body has entered.

If the eye bulges on contact with the magnet, and the foreign body does not make its exit easily, it is better to enlarge the original wound. The magnet will sometimes tear the piece of metal through the wound, and thus increase the amount of traumatism and danger to the eye.

Sometimes when the magnet approaches an eye in which there is a piece of metal capable of being acted on, the globe can be observed to move forward as if to meet the magnet. This is not always the case, however, and the surgeon should not hastily decide that no piece of metal is in the eye if no movement is observed. In one of Dr. Van Fleet's cases, where the eye was filled with blood, and it was impossible to get a view of the interior, the magnet was applied without result. After an interval of a few minutes it was again applied without result. He had about decided that there was nothing in the eye which the magnet would attract, but concluded to make a final contact, when a small piece of iron came through the wound, and fastened itself on the point of the magnet. This not unusual experience is explained by Callan on the hypothesis that it is necessary for the iron to become magnetized before the attractive force can be exerted.

The Haab magnet is certainly one of the most useful additions to the armamentarium of the ophthalmologist—one of the many products of the last century for the benefit of mankind. Our readers will therefore be interested not only in an illustration of the magnet, but also of the Ophthalmic Hospital at Zurich, where Dr. Haab teaches Ophthalmology to a numerous class of eager students.

In the July number of the *Medical Review of Reviews* we gave an abstract of an article on the treatment of foreign bodies in the eyes, which described the methods of procedure for the use of the Haab magnet, as well as localization by X-rays of the foreign body.

THE EYE DEFECTS WHICH MAY CAUSE APPARENT MENTAL DULLNESS AND DEFICIENCY IN CHILDREN.

Chas. Stedman Bull (*Pediatrics*, February) reviews the eye defects which may cause mental dullness and deficiency in children. The most frequent is hypermetropia, which incapacitates the patient for sustained accommodative effort. The next most frequent is astigmatism, which is often the cause of the unjust charge of dullness, and may be responsible for various reflexes and even epileptiform attacks. The third and most distressing refractive error is myopia. Unable to see what his companions see, and jeered at for his failure, he becomes introspective, and frequently perverted in his tastes.

More rare defects are: Congenital cataract, lens dislocation, coloboma, aniridia and muscular anomalies.

The author also refers to congenital word-blindness, of which cases have been reported by Nettleship and Hinshelwood.

BOOK REVIEWS.

OPHTHALMIC MYOLOGY. A Systematic Treatise on the Ocular Muscles. By G. C. SAVAGE, M.D. Sixty-one Illustrative Cuts and 6 Plates. Published by the author. Nashville, Tenn. 1902.

The name of the author of this interesting work is sufficiently known and connected with all the more recently acquired knowledge in this special field, that we can confidently greet a systematic treatise from his pen as a welcome addition to our literature. A perusal of the book has convinced us that our expectations were fully realized. Whether Helmholtz or Savage is right concerning Listing's Law, the reader will have to judge for himself. Surely the author has done his work with great enthusiasm and in a painstaking manner. Every student of ophthalmology should possess this book, and no ophthalmic practitioner should be without it.

VISUAL ECONOMICS, WITH RULES FOR ESTIMATION OF THE EARNING ABILITY AFTER INJURIES TO THE EYE. By H. MAGNUS, M.D., and H. V. WÜRDEMANN, M. D. C. Porth, 105 Grand Avenue, Milwaukee, Wis. 1902.

No book of more practical value has recently appeared than this volume, which combines the works of two authors who have conjointly labored to establish logical rules for the deduction of loss in earning capacity after injuries to the eyes. Practical tables, which allow of easy computation of the money value of any such loss, enhance its usefulness very greatly. The book is of great value both to the medical and to the legal profession, and we think it will be found to give a safe basis for the adjustment of the damage cases which hitherto were often decided more according to sentiment than reason. This book should enjoy the widest possible circulation.

ALT.

THE AMERICAN JOURNAL
OF
OPHTHALMOLOGY.

VOL. XIX. MAY, 1902. No. 5.

ORIGINAL ARTICLES.

THE MISUSE OF GLASSES.*

BY F. C. HOTZ, M.D..

Professor of Ophthalmology and Otology, Rush Medical College, in Affiliation with the University of Chicago.

On the 23d of January, when your secretary came to my office to urge me to accept your president's invitation to address this meeting, I had just finished the examination of the following case: A young man, 28 years of age, healthy and strong, living in a small country town, could not read or write much during the past two months, because soon after he began his eyes ached. He never had any headache and during school life his eyes never caused him any trouble. He remembered he had a cold shortly before the present trouble began. An oculist had prescribed glasses (+ 1D) which he had been wearing these two months, but without any relief.

The examination showed orthophoria, normal fundi; and under homatropine V $^{20}/_{16}$ with +. 75D. The retrotarsal folds of the upper lids were very red and slightly swollen. It was a plain case of conjunctivitis, and a few applications

---

***Read at the meeting of the Western Ophthalmologic and Oto-Laryngologic Association, held at Chicago, April 10, 11 and 12, 1902.**

of protargol (5%) to the retrotarsal folds, followed by daily instillations of a solution of boric acid (2%) and alum ($^1/_5$%) relieved the patient within two weeks so that he could read again with perfect comfort for hours, though on my advice he had laid aside his glasses directly after the first visit.

This is one instance of many in which the discomfort caused by conjunctivitis is mistaken for asthenopia, and superfluous and useless glasses are inflicted upon the patient. An unprejudiced mind finds it difficult to understand how in this case an oculist could have pinned his faith upon the curative power of lenses when the whole history of the patient and the findings of the examination presented no evidence of eyestrain. The patient never had suffered from headache in his life and had not experienced the slightest eye trouble while in school. These facts, I think, are of the greatest significance; for the great demands our schools put upon the vital forces of a child, together with the greater susceptibility of the nervous system of the growing organism, render the period of adolescence an especially favorable field for the display of the disturbing effects of ametropia upon the nervous system. Slight degrees of ametropia are a prolific source of headaches during this critical period in life; and we have frequent occasion to correct slight degrees of ametropia for the relief of asthenopic symptoms in school children. But many of these children, after leaving school, if in perfect health, can discontinue the use of their glasses without suffering any inconvenience or discomfort, though their refraction errors have remained unchanged; which only goes to prove that the nerve forces of a normal young adult are abundantly able to meet the special demands of moderate degrees of ametropia without the least disturbance of their equilibrium.

Whenever, therefore, a healthy young adult complains of discomfort in using his eyes and upon searching inquiry no evidence can be obtained, that during school life he had suffered from eyepains or headaches, I think we should not accept an existing slight ametropia as the cause of his discomfort unless the most scrutinizing examination fails to detect any other, local or general, condition which might account for the apparent asthenopia.

While I do not for a moment countenance the practice in vogue in many large dispensaries, especially in Europe, where patient after patient with aching eyes is dismissed after a casual examination as a case of conjunctivitis, because the eyes are red and watery, when a careful examination of refraction would show that glasses are needed, I maintain, on the other hand, that in many instances, like in the case I mentioned as an introduction to this address, glasses are prescribed where the patient's complaints are not caused by the existing ametropia, but are due to pathologic conditions of the conjunctiva which are overlooked. In making this statement I do not intend to cast any reflection upon the carefulness and ability of the attending oculist. I know my confrères are as painstaking in their examinations and as able as I am to tell conjunctival changes when they see them; and if, under certain conditions, I see them where they do not, it is not because they are less careful in their examination or less competent, but because we pursue different methods in the examination of the lids.

The prevailing method of examining the conjunctiva is first to expose the conjunctiva of the lower lid by drawing it down and away from the eyeball, and then to evert the upper lid to inspect its conjunctival surface. If the conjunctiva thus exposed appears normal, the examiner comes to the conclusion that, nothing being wrong with the lids, the discomfort of the patient in near work must be due to the present error of refraction and that glasses must be prescribed.

But does the simple eversion of the upper lid expose the whole expanse of conjunctiva? Or does it not conceal from our view the retrotarsal fold? And is not this fold sometimes the seat of marked pathologic changes, while the palpebral conjunctiva may present a normal condition? The examination of the lids, therefore, cannot be said to be complete unless it includes the inspection of the retrotarsal folds of the upper lids; and they can be exposed to our view very easily by the following procedure: While the free border of the everted upper lid is firmly pressed by the thumb or index finger of the left hand against the supraorbital margin, the forefinger of the right hand placed upon the lower lid pushes the latter upward until it pretty well covers the cornea, when a gentle but steady pressure is made upon the globe as if to push it backwards into the orbit; a slight back pressure of this kind is sufficient to make the retrotarsal fold come down from behind the everted lid. The whole manipulation is easy and gentle, harmless and painless, and it can safely be used with the exception of cases of deep and extensive corneal ulcers. I have tested its practical value in a great many cases, but hardly ever with more telling effect than in the following instance: About ten years ago a physician who was taking post-graduate courses in this city consulted me about his eyes. He had been seriously handicapped in his studies because he could not read up at night about what he had seen in the clinics during the day, because his eyes began to ache and his lids to droop after reading half an hour. He had consulted the professor of his school, who first prescribed reading glasses for a slight hypermetropia; and when the glasses (+ 1D) failed to bring the expected relief, he advised an operation for ptosis. It was in regard to the advisability of this operation that the doctor wished to obtain my opinion. When I examined the lids in the usual way the visible conjunctiva showed nothing abnormal; but my back pressure method at once revealed the retrotarsal folds thickly studded with follicular bodies. I of course had to advise against the proposed operation; and after the follicles had been removed by expression and the eyes were treated with boric acid for ten days, the doctor could take up his studies and enjoy reading for hours with comfort though he did not use his glasses. He assured me the other oculist had repeatedly everted the lids for examination, and wondered why he did not see the follicular condition of the folds.

You will now understand why he failed; you will also fully appreciate the force of my advice that in healthy young adults, especially if they have not suffered from asthenopic complaints during school life, we should always make a most searching examination of the conjunctiva before we suspect a slight refraction error as the cause of the patient's complaints; because failure of detecting present pathologic conditions of the conjunctiva leads to misunderstanding the etiology of the complaints and to prescribing glasses which are no benefit to the patient and therefore superfluous.

Another class of patients who not infrequently are the victims of superfluous glasses are the sufferers of blepharitis. This inflammation of the lid margins, no matter how slight, is always attended by more or less hyperæmia of the conjunctiva; and owing to this hyperæmia blepharitic eyes are exceedingly sensitive and irritable, easily disposed to become red, watery and painful. These symptoms are particularly likely to develop during prolonged near work, so that blepharitic persons applying themselves to close work (bookkeepers, stenographers, students, seamstresses) are usually complaining of blurring of vision, painful eyes, and often even of headache. In many of these cases the scales along the lid borders are like fine dust and easily overlooked; the patient's complaints are taken for accommodative asthenopia and treated with glasses. Now if such persons have faithfully used their glasses for a year or two without benefit, if then they are relieved of their complaints in a week or two by the proper treatment of the blepharitis and thereafter continue their work with perfect comfort though they do not use glasses, we are forced to the conclusion that the glasses were unnecessary. No other conclusion seems to be permissible in cases like these:

1. January 21, 1900, Mr. J. F. E., 25 years old, bookkeeper for four years; can work over his books several hours in the morning with comparative comfort; toward noon, however, his eyes get red, watery and burning, and in the afternoon a dull headache often compels him to interrupt his work. During the past year he has been treated with various eye waters and has worn glasses (R.E. + .50 cyl. ax. 100°; L.E. + .25 cyl. ax. 70°), but without any benefit. Lid edges slightly red and covered with fine scales like dust. R.E. $^{20}/_{15}$, with + .50 cyl. ax. 180°; L.E. $^{20}/_{15}$, blurred by + 25 sph. or cyl. Lids were treated with ichthyol ointment; glasses discarded.

January 31. Noticed improvement after two treatments; now lids well and he can do a full day's work without the slightest inconvenience.

2. Miss C., 19 years old, came to me last November. For 4-5 years eyes smarting, burning and watering. During the past two years wearing glasses (.25 cyl. ax. 90°); nothing was ever done to her lids. Lid edges very red and

thickly coated by soft epidermis scales. Under homatropine each eye V. $^{20}/_{15}$, with + .25 cyl. ax. 90°. Glasses were discarded; lids treated with arg. nitr. and ichthyol ointment; and in two weeks the blepharitis was cured and she could resume her work as dressmaker without further inconvenience.

In the second case the blepharitis was so marked that it could not have been overlooked by the attending oculist, and the fact that he paid no attention to it makes me suspect he believed in the false doctrine that refraction errors are the cause of blepharitis and their correction by glasses cures the lid trouble.

The relation of ametropia to blepharitis was first brought to our notice by Dr. Roosa of New York in a very interesting paper read before the International Ophthalmological Congress in New York in 1876. He summed up his observations in these sentences: Ametropia seems to be the condition of most eyes affected with blepharitis ciliaris. Hypermetropia is the error of refraction most frequently associated with blepharitis ciliaris, and when blepharitis is associated with errors of refraction the cure of the edge of the lid is very much facilitated by and sometimes depends upon the correction of the ametropia.

You will observe Roosa claimed neither that ametropia causes blepharitis nor that correcting glasses alone would cure it. What he maintained was that an existing blepharitis (like an existing conjunctivitis) may be aggravated and our treatment may be interfered with by the adverse influence of existing ametropia. The practical conclusion to be drawn from these observations is that the refraction of blepharitic patients should always be examined, and in refractory cases the ametropia should be corrected, because it is very probable that in such cases eyestrain frustrates our therapeutic efforts, and that the removal of this obnoxious influence will greatly aid the local treatment of the lids.

Dr. Keyser, however, writing on the same subject one year after Roosa, expressed the belief that ametropia was in many if not in all cases the direct cause of blepharitis; and although Roosa's report showed that in the great majority of his cases the hypermetropia was of a low degree (one dioptry and less), we find in one of the most widely-circulated modern text-books this statement: "The usual presence of considerable degrees of ametropia has led to the belief that this causes blepharitis" (Roosa). And this statement is followed by the advice that "in all cases the refraction should be ascertained and any anomalous condition corrected by suitable glasses."

Thus the impression is created that the chief, if not only, service to be rendered to blepharitic patients is the prescription of glasses; and as with our present tests we can easily find an ametropia of a quarter or half dioptry in almost every eye, physicians can always find an excuse for prescribing glasses to blepharitic patients; but if they keep track of these patients they will also find that these weak lenses usually are of no value, because the additional accommodative work imposed on the eyes by these low grades of ametropia is too trifling to create so much local disturbance as is manifested by the inflammation of the lid margins.

Mr. President: Lest my remarks be misunderstood, I wish to state I do not belong to those who consider the correction of low degrees of ametropia as superfluous under all circumstances. On the contrary I have long ago convinced myself that weak lenses have their sphere of usefulness, and (in 1894) I have written a paper in their defense, from which I will quote the following passage which clearly defines my position: "In the light of these clinical proofs it must be conceded that these weak cylinders are not superfluous glasses; that their therapeutic value is not mythical, but real; and that the oculist will render his patients a great service by prescribing these weak glasses whenever in his judgment he has reason to believe that the existing low degree of ametropia is the source of the patient's distress."

We must not forget that the eye is most successful in correcting by accommodative efforts the optical disturbances produced by slight degrees of hypermetropia or astigmatism, while in the higher degrees of these refractive errors it does not succeed, and therefore abandons the efforts. The moderate degrees, therefore, are the prevailing errors of refraction found in patients complaining of the symptoms of eyestrain.

The degree of ametropia does not constitute the principal condition in the production of distressing symptoms; and experience does not sustain the statement that hypermetropia or astigmatism less than 0.75D seldom causes discomfort or headaches. The state of health, the condition of the nervous system, the occupation are very important factors, and frequently account for the fact that in many persons a slight hypermetropia or astigmatism causes great distress, while other persons never experience the slightest discomfort from the same ametropia in kind and degree.

Many eyes can endure a great amount of strain with impunity, while other eyes are so constituted that their powers of endurance are quickly exhausted. One person may need glasses for the correction of a small amount of ametropia, while in another person the correction of a much higher degree is unnecessary and glasses would be superfluous. We cannot draw the line at a certain amount of ametropia; but should correct it, no matter how slight in degree, whenever it leads to disturbances for which eyestrain constitutes a frequent cause.

To be sure, I am not prejudiced at all against weak lenses; I do not oppose the correction of ametropia because it is of an insignificant degree; but I do object to the indiscriminate prescribing of glasses.

Glasses are no ornament; they do not improve the personal appearance or the facial expression; they are a nuisance at best, and therefore should not be inflicted upon patients unless we have good and sufficient reason to believe their complaints are caused by the existing ametropia.

Refraction work has become a very prominent and important part of our practice; it is done with more care and greater accuracy in this country than anywhere in the world, and has achieved many brilliant and often unlooked-for triumphs. But, dazzled by these brilliant achievements, some oculists seem to have gone refraction-mad; they attribute every discomfort in the use of the eyes to eyestrain; they fairly hunt for refraction errors and imagine they are doing scientific work if they prescribe glasses for any degree of ametropia they can detect.

What absurd consequences this one-sided tendency may sometimes lead to I will illustrate by the following two instances:

1. In January, a lady from Iowa, 44 years old, consulted me on account of asthenopia. For more than ten years she had been unable to read because her eyes began to ache after a short attempt. She was a confirmed neurasthenic; her eyes showed no disease; V. of R.E. $^{20}/_{200}$, with — 4 cyl. ax. 15°$=^{20}/_{70}$; L.E. $^{20}/_{20}$; with + 1.50 smallest print very distinct; but after reading fifteen minutes pain compelled her to stop, even if the right eye had been closed all the time. This woman had been constantly wearing glasses (R.E. — 5 cyl. ax. 180°; L.E. + .50 D.) the past ten years, which were given her by an experienced oculist in this city. Now was it reasonable to expect any good result from the correction of the anisometropy in this case? The sight of the uncorrected right eye is so poor that the woman depends for seeing entirely on her left eye; and the kind and degree of the ametropia certainly make it impossible to better the vision by any spontaneous effort of the ciliary muscle. Hence eyestrain is evidently not the cause of the woman's trouble, and therefore the correction of the astigmatism of the R.E. of no use. But suppose the correction would make the vision of the R.E. fairly good ($^{30}/_{40}$ or $^{20}/_{30}$), would it be likely to relieve her trouble? I think not; on the contrary I believe it would increase her misery by adding all the distress of hyperphoria to her old troubles. For the concave cylinder with horizontal axis acts like a vertical prism as soon as the visual line passes below or above the plane of the cylinder axis; and Dr. Jackson showed (*Ophthalmic Record*, Jan., 1902) that the prismatic effect of a 4 D. lens amounts to one degree for every 2.3 mm. decentration. For obvious reasons the line of vision cannot remain in the plane of the cylinder axis in all the acts of looking; in reading, for instance, it will necessarily pass 2, 3 or 4 mm. below this line. And as this is equivalent to decentering the cylinder, it is clear the —4 cyl. would necessarily cause a distressing vertical diplopia.

2. A gentleman from Michigan, 42 years old, has tried for twenty years to obtain relief from headaches and eye pains. He has had various glasses; the last pair (R.E—1.50 cyl. ax. 180°; L.E.+1.25 cyl. ax. 180°) made him so dizzy and nervous that he could not wear them five minutes. I found R.E.V. $^{20}/_{30}$ with —4 ⌒ —1.50 cyl. ax 180°; L.E.V. $^{20}/_{20}$

with $+50 \frown +1.25$ cyl. ax. 180°. But with these compound lenses, as well as with the cylinders alone, he had vertical diplopia, the images separating perceptibly under the slightest movement of the eyes upward or downward. When a red glass was put before the right eye, and the patient looked down, the red image was the upper one, and when he looked up the red image was the lower one. We can easily account for these phenomena; for the lower half of the concave cylinder of the right eye acted like a prism, base down, and its upper half like a prism, base up, while the lower half of the convex cylinder of the left eye acted like a prism, base up, and the upper half like a prism, base down. Hence the prismatic effect of both cylinders acting in opposite directions increased the vertical displacement of the images, and it was a physical impossibility for the patient to wear glasses which corrected, in part or in whole, the refraction errors of both eyes; and it showed a lack of good common sense to prescribe such glasses.

It was Huxley, I believe, who once said, "Science is nothing but trained and organized common sense." This definition, I think, applies with particular force to a practical science like ours. A good dose of common sense should always guide us in our work; it will save us from becoming dogmatic and one-sided; it will make us treat our patients not as mere scientific problems, but as human beings anxious to be relieved of their troubles; it will make us cast theories to the winds and consider only real conditions; and, among other things, it will sometimes, perhaps many times, guard against the misuse of glasses.

TOXIC AMBLYOPIA.*

BY DUDLEY S. REYNOLDS, A.M., M.D.,
LOUISVILLE, KY.

IT is not my purpose to discuss the subject of toxic amblyopia beyond the limits of personal experience, which I regret to say is not entirely in accordance with text-book authority.

I have chosen for purposes of illustration a case of nearly total blindness, the result of drinking essence of cinnamon; a typical case of autotoxæmia; and four cases of tobacco amblyopia in persons who have never taken alcohol.

CASE I.—J. H. P. of Morgan County, Ky., was brought to me on the 21st of November, 1901, by Dr. B. F. Carter, with the statement that, on the night of August 5, 1901, the patient, in company with two other persons, indulged in a debauch, each of them drinking about twelve bottles of essence of cinnamon, the bottles containing near three ounces, amounting in all to more than one pint of the essence. Dr. C. was called next morning, August 6th, and found all three of the persons in profound stupor, with dilated pupils and stertorous breathing. The other two died without recovering consciousness, one during the night of the 6th, the other at noon on the 7th. P. vomited during the entire night of the 6th and all day of the 7th of August. He had a temperature of 105° F.; pulse 150, difficult to count; breathing so irregular it was not counted.

He remained in bed for three weeks, having at times short intervals of consciousness, during which he complained of being entirely blind. During all this time he occasionally vomited bloody mucous and small quantities of green bile. He complained constantly of pain in the head, with cramping in the stomach and legs. With gradual recovery of general health his sight did not improve.

On the 21st of November I found him with nearly obliterated retinal arteries, large veins, extremely pale, ashy-colored discs, with steamy opacity extending into the retina (Fig. 1). His field of perception of white, on a black background, was extremely narrow, and limited to the nasal side in the right eye. Under favorable light he counted fingers at 11 inches distant. He could not distinguish any of Snellen's test type. The left eye had a much wider field of perception, lying chiefly to the nasal side of the disc. He could count fingers in a favorable light at 4 feet 9 inches, but, singularly enough, he was unable to distinguish any of the test type at any distance. His capacity for recognizing form of objects seemed totally obliterated. For example, he could not recognize my hand with the right eye excepting as a dark object. He could distinguish one finger, but could not distinguish two; the shadow seemed larger when more fingers were raised.

---

*Read to the Western Ophthalmologic and Oto-Laryngologic Association, Chicago, April 12, 1902.

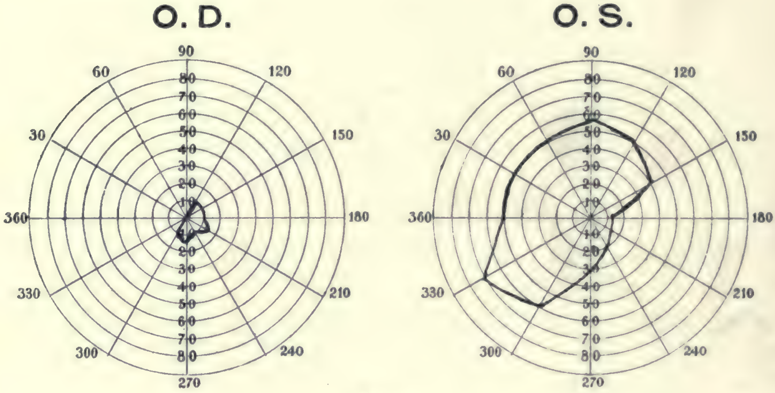


FIG. 1.

Just how much importance to attribute to the cinnamon, and how much to the alcohol, is difficult to determine.

The pupils were sluggish, about 3 millimeters in diameter, and responded imperfectly to homatropin. There were apparently no disturbances in the movements of the ocular muscles. He had not been in the habit of taking liquors, and had never used tobacco.

The history of acute alcoholic poisoning does not show such permanent and disastrous results. The blotting out of the temporal side of the field in the right eye, and the almost entire extinction of it in the left, would be difficult to explain. The irregularity of peripheral contraction of the field is likewise not common to alcoholic poisoning. I am constrained to believe that the cinnamon was in this case the chief toxic agent.

From Dr. Carter's notes, and my own examination of the patient, it is quite impossible to know if central scotoma existed at any time. Surely nothing of the kind could be disclosed in my examination. Of course, he has no color perception. Strychnine has proved unavailing. The evidences of extensive neuro-retinitis are distinct.

Case II.—Mrs. E., aged 30, Giles County, Tennessee, came to consult me about her eyes, May 31st, 1900. She had been under the treatment of several eminent specialists for optic neuritis. She could distinguish with the right eye $^6/_{60}$ Snellen, and with the left eye none of the test type at any distance. Perimetry showed large central incomplete scotoma in the left eye, and smaller incomplete scotoma in the right eye. Ophthalmoscopic examination disclosed hyperæmia of both discs, without other abnormal appearances.

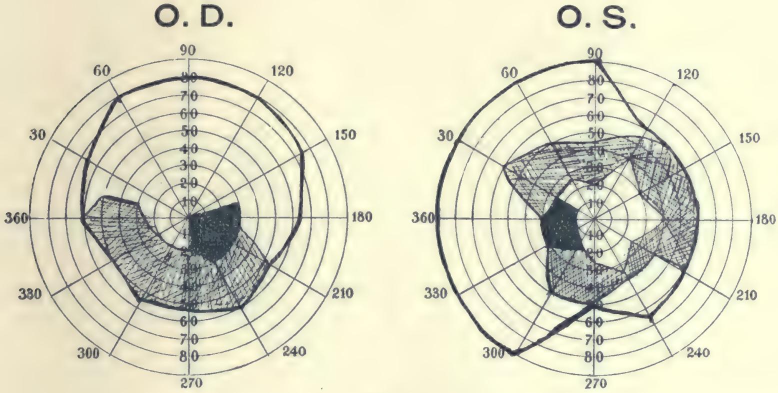
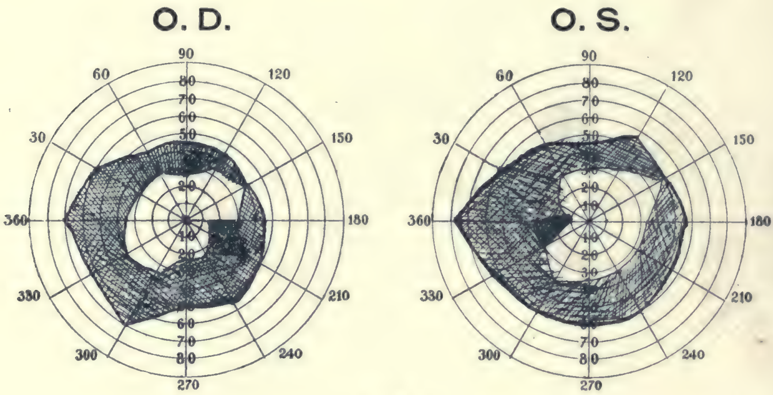


Fig. 2.

She was pale, thin, with feeble pulse, mottled complexion. She suffered with a sense of oppression on eating; had no appetite; and could not remember when her bowels moved without taking medicine. She did not drink water, and had recently abandoned coffee and tea on account of indigestion. She had been recommended to adopt the milk diet, but had been unable to do so. She was exceedingly feeble, and suffered with insomnia.

Twelve ounces of citrate of magnesia failing to produce any result, a grain of calomel, with one-half grain each of podophyllin and aloin, cleared the alimentary tract. She afterwards took one-half ounce of phosphate of sodium in one pint of water on arising in the morning. She was denied solid food, and required to take one-half pint of fluid nourishment every two hours during the day, followed by 5 minims of tincture of nux vomica in one-half pint of water at each dose. She was required to have a plunge bath every morning and every evening, and an occasional dose of quinine, 10 grains, at night. At first she could not sleep, and was required to take a quart of malted milk, warm, at 9 P.M. This promptly relieved the insomnia, and she went on improving until June 28th, when, after correcting hypermetropic refraction, she read $^{6}/_{9}+$ with the right eye and $^{6}/_{18}$ with the left. She continued to improve until full restoration of normal acuity of perception exists in both eyes. She is in robust health, having gained more than fifty pounds in weight, and enjoys perfectly comfortable vision.


O. D.

O. S.

FIG. 3.

I have many similar experiences, and select this as the best representative of a large class of patients, mostly women.

CASE III.—March 3, 1900, B. C. L., aged 46. A fine, robust-looking man; a traveling salesman. He came to me to see about getting glasses with which to read. Careful testing showed that, with + 0.25c 90°. Sight = $^{6}/_{18}$ in the right eye, and with the same correction, sight = $^{6}/_{12}$ in the left eye. Ophthalmoscopic examination showed pale discs only. Perimetry disclosed ring-scotoma, incomplete in the right eye; complete in the left, with peripheral contraction in both fields, with remarkably enlarged and irregular blind spots corresponding to the discs (Fig. 2).

Mr. L. had no bad habits excepting that he smoked almost continuously. The nature of his amblyopia being explained to him, he at once abandoned tobacco, and was given pills of assafœtida and nux vomica (¼ grain to 3 grains), one pill to be taken before each meal and at bedtime. On the 6th of April re-examination showed slight improvement in visual acuity in the right eye, while vision in the left rose to $^6/_6$. Further improvement has resulted until he now sees $^6/_9$ Snellen with the right eye.

Case IV.—June 15, 1900, J. R. P., aged 27. Insurance agent. Complained of indistinct vision in reading, and of great difficulty in adding up columns of figures. Under cycloplegia I found hyperopic astigmatism in both eyes, correcting which he saw $^6/_6+$ with the right eye and $^6/_6-$ with the left. A fine film of smoky haziness seemed to hover around the center of objects looked at. In looking at a long word he could not see the whole word distinctly at one time. The field in both eyes, as shown in Fig. 3, shows great contraction of the periphery. Incomplete scotoma surrounded the central field. The blind spots corresponding to the papillæ were enormously enlarged and of irregular outline. The ophthalmoscope showed pale discs only.

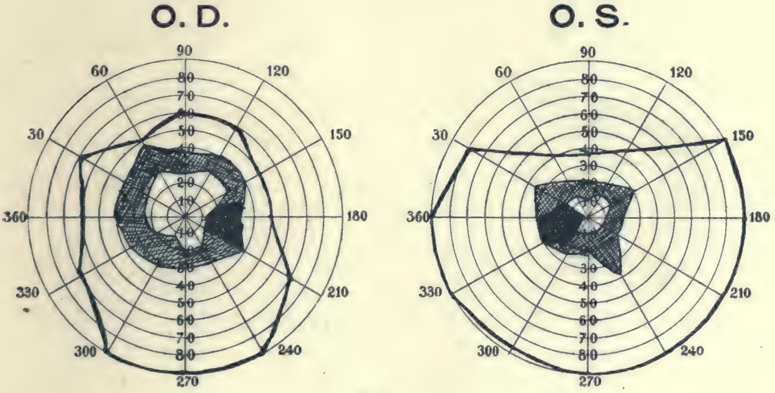


Fig. 4.

He had been an habitual cigarette smoker for the past ten years. Had never used alcoholics, nor tobacco in any other form. Abandoning the habit gave him little or no trouble, and his field, he thinks, has entirely cleared up, though I have not had the opportunity of re-examining it.

Case V.—J. J. E., aged 29. Train dispatcher. June 19, 1901. Had indistinct vision, with difficulty in reading at night. Testing refraction showed emmetropia, with sight $= {}^{6}/_{12}$ in the right eye, and ${}^{6}/_{18}$ in the left. (Fig. 4.) Peripheral contraction of the field in the right eye was much greater than in the left. Incomplete ring-scotoma exists in both eyes, completely encircling the center of the field. He was an habitual smoker, but had never used liquors of any kind. Abandoning tobacco has, without the aid of drugs, entirely relieved the right eye, and he has nearly normal acuity of vision in the left eye, after a lapse of six weeks.

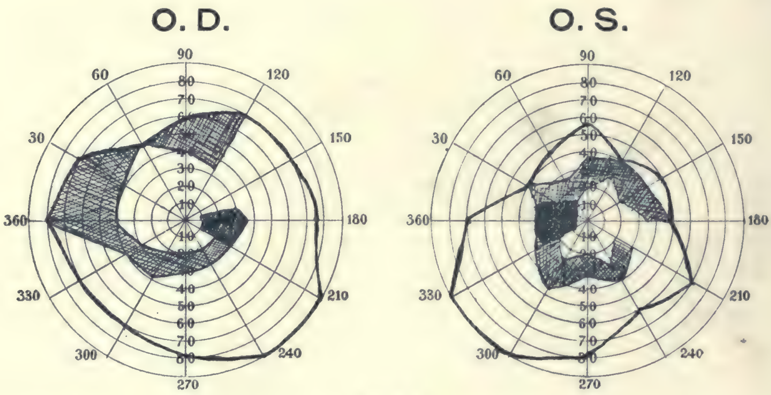


Fig. 5.

Case VI.—C. A. W., aged 26. Clerk in Adams Express office. January 3, 1902. In good general health, had never used alcoholics. He had noticed for the past six months a gradually increasing film near the center of his field of vision, which greatly annoyed him, especially at night. (Fig. 5). He had normal acuity of vision in each eye, with irregular peripheral contraction of the field, and incomplete ring-scotoma. He abandoned tobacco, and in two months has entirely recovered.

In Cases V. and VI. it will be observed that the same abnormal conditions of the papillæ were observed. There were no ophthalmoscopic signs.

BLEACHING OR DISTINCT PALLOR OF THE TEMPORAL SEGMENT OR PAPILLO-MACULAR BUNDLE OF OPTIC NERVE FIBERS DUE TO OTHER CAUSES THAN TOBACCO AND ALCOHOL.*

By J. O. STILLSON, M.D.,

INDIANAPOLIS, IND.

IN an article on Toxic Amblyopia†, published in the *Ophthalmic Record*, October, 1899, the writer of this paper made mention of the fact that a certain class of cases may be found wherein the functional signs and objective symptoms so closely resemble that disease that one would sometimes be justifiable in disputing the word of honor of an otherwise worthy patient, and charging to the account of some vicious habit the resulting decrease of visual acuity, instead of searching for the cause in the physical rather than in the moral make-up of the patient.

In the same paper referred to‡ " Some of these cases presented well-pronounced pallor of the nerve head on the side next to the macula lutea, and a few among women resembled markedly, but had to be excluded from tobacco blindness, because of the known absence of this factor, the writer being convinced at that time that this disease is far more prevalent than has heretofore been held, and that functional disturbances of vision, in one or both eyes, may be due to the introduction into the circulation of toxic agents other than tobacco and alcohol; that the two great agents, whisky and tobacco, substances which produce at all times more or less disturbance in the general circulation, while they have been accredited with this malady either together or alone, yet are not wholly to blame, but other agents may be found which will produce like conditions, temporarily, and even permanently, and that some of our best observers, notably Wood, Sachs, De Schweinitz, Knapp and others, have met with cases due to various drugs, e.g., lead in painters, stramonium, which is found in asthma cigarettes, quinine in excessive doses, etc.,

---

*Read at the meeting of the Western Ophthalmologic and Oto-Laryngologic Association, held at Chicago, April 10, 11 and 12, 1902.

†Ophthalmic Record, October, 1899. Vol. VIII., page 502.

‡Loc. cit., 502, et sq.

etc., *and that it is highly probable that certain elements existing in the system under certain depraved conditions produce auto-intoxication (diabetes, lithiasis, sepsis, etc.), as well as certain chemical combinations occurring in the stomach or intestines under analogous conditions, either alone or combined with elements of tissue waste, must be recognized as factors in bringing about disturbances in the visual fields, and that optic nerve changes may occur characteristic of this condition, both in the acute and chronic form.*"

In the following autumn a case came under the observation of the writer which presented some peculiar features not before seen. It had had every feature objectively of retrobulbar toxic amblyopia, with none of the elements of history justifying this diagnosis other than the subjective symptoms peculiar to diminished visual acuity, scotomata, and pallor of the temporal zones, and, so far as could be seen, fairly good circulation in the retinal vessels, and otherwise normal fundi.

Miss Kate M., nurse, aged 35, slightly anæmic, neurasthenic, but otherwise uncomplaining as to general health, menstrual functions not disturbed, has for the past two years been engaged in nursing an aged lady, who is quite feeble and a great care and task on her strength. This was in the autumn of 1899. Prior to last year she was able, notwithstanding the feebleness of her charge, to get regular sleep at night and sufficient exercise during the day in the open air, to enable her to nurse this case alone and administer to her ever-increasing demands for attention. But for the past year sleep at night has been obtained with difficulty and often not at all. Her vigils had to be alternated between day and night, most of the time during the whole night, at which times she was relieved during the day by some member of the patient's family. Her sleep during this time has usually been obtained during the forenoon, and with one or two hours relaxation in the open air during the afternoons she has been compelled to resume her duties upon the approach of evening and continue the same throughout the night. Much of the time at night has been spent reading. On account of her gradual failure of sight which has been noticed for the last four or five months, she was of the opinion that her refraction required correction, and was surprised to find that glasses did not at once relieve the difficulty. Upon ophthalmoscopic examination the temporal sides of both optic nerve disks showed well-marked pallor; this condition was somewhat more marked in the right eye than in the left. The perimeter showed central scotomata for colors red and green, and there was symmetrical contraction of both fields for form. At once the suspicion was aroused that she might be in the habit of taking some form of narcotic or hypnotic, and every effort was made to find out what this might be. She, however, persisted that such could not be the case, and as she was a very sensible woman of undoubted veracity, and as she was familiar with the action of drugs, having had ten years or more experience as a trained nurse, this had to be excluded. No alcoholism could for a moment be entertained, and of course no tobacco history. At first I was led to hope that it might turn out to be hysterical in origin, but this had to be also abandoned for the reason that she showed no signs of anything of the kind. There were in her make up, however, the indications of a run down condition of health which I finally attributed to her work. She was put upon treatment, ordered baths and given alterative doses of sodium iodide, with an occasional saline, but this treatment made but little effect on her visual trouble. This went on for several months. During the winter she disappeared from observation, but returned in the spring in practically the same condition as before except possibly slight decrease in visual acuity. Soon after this her patient died, and she went on a short vacation expecting to return and resume her eye treatment. But I did not see her as soon as expected. Some months later she returned, and reported that after her vacation, she had undergone an operation for appendicitis at the hands of a very reliable and trustworthy surgeon, who reported to her that he had found a pus cavity, the size of which I did not learn, and that he had removed it with the appendix. She spent some six weeks in the hospital and made a good recovery from this trouble and had now resumed her normal habits of sleep at the house of the family where she had been employed as a nurse, and where she was urged to remain until she should fully regain her health and sight. The treatment was now resumed for her eye trouble and she was given pilocarpine and strychnine, the latter in gradually increasing dosage until it was carried to the point of toleration. A dark room was advised, and her exercise which consisted in walking and massage was obtained at night. One thing I had observed about the pupils, that they had from the beginning been rather large and the pupillary reflexes were sluggish. Eserine was occasionally used in the eyes to produce myosis, and all attempts to use the eyes prohibited. This was kept up for something like six weeks. At the end of that time she began to improve in sight and the pupils no longer required a myotic, but resumed their former activity and reaction to light. During the course of this last treatment she alternated at times in her habits of sleep; for a week or so her sleep would be obtained entirely in the day time, and she would remain wakeful throughout the night; the next week she would switch around and sleep entirely at night. To avoid the unpleasantness of night wakefulness I allowed her to have company during the days and gave her medicines at this time, following it up at times with bromides in the evening, and in this way finally obtained good restful nights and cheerful days. The perimeter now began to show some improvement in the fields; the concentric contractions widened for form and the central scotomata faded, but the appearance of the papillo-macular segments was the last to return to normal. In fact the last time I saw her I thought they still looked pale though greatly improved. This patient went on to what she seemed to believe was a complete recovery. A year after this experience I met her one day in the city, and she reported that she was now entirely well. Her refraction had been corrected, at the first interview long before the operation on the appendix, and she was using the same glasses which were satisfactory to her.

I report this case because it was very puzzling to me at the time, and I do not now know what was the matter unless it might have been toxicity due to sepsis. I ought to say that her constipation, from which she had suffered before the operation, disappeared, and the functions all resumed their natural order. Whether this could partly be attributed to the strychnia or not, I am unable to say. Doubtless the prolonged rest after the two years of strain and worry had much to do with the cure. As to the pallor of the nerve heads and their gradual recovery, I have also no other explanation to offer, but of the facts as stated above in the history of the case I am quite sure.

I observed the same phenomena in another case about a year ago, in the person of a young lady who was a very ambitious college girl. She was run down in health and strength, and on her way home for rest I learned from her that her brother had been treated by a very reliable and eminent oculist of Washington for tobacco amblyopia, and that he had recovered upon the cessation of the use of the weed, but as in her case there could be no tobacco nor alcohol, I was led to believe that we might both of us be mistaken by a physiological pallor common to two people in the same family, and that there might be some hereditary neurosis at the bottom of these cases, and I was quite anxious to have her return for further observation later, but she had not yet done so. She was a sufferer from chronic constipation. In this case the trouble was also bilateral, both nerves looking pale.

In this connection, it seems to the writer, that it would not be out of place to ask the question what, in the opinion of those present, constitutes physiological pallor, and what we understand to be the dividing line between physiological and pathological pallor. In other words, how does the normal nerve head look to different observers, and how will each of us describe in intelligent language just what he sees when he finds what to him seems to be a departure from the so-called normal papilla, so far as coloration is concerned? I remember once to have heard a discussion along this line as to the apparent size of the papilla. I remember what a difference there seemed to be among different able observers on this point, and how utterly at variance the descriptions seemed to be. One likened the papilla in size to a three-dollar gold piece. Now this is a coin which is to-day quite rare; in fact, but few have seen such a coin. We all have doubtless seen the two-and-a-half dollar gold piece. To me this coin looks larger than the optic papilla. In that discussion another said that it looked to him the size of a three cent silver piece; another thought it was the size of a dime; another the size of a copper cent, and one even said it looked to him as large as a quarter. We all readily understand the difference between the upright and inverted image so far as size or apparent size of the papilla is concerned, as well as the different degrees of "grossisment" or enlargement caused by the apparent magnification in myopic eyes; yet still notwithstanding allowances made for this reason, we find in looking over the different atlasses a wide dissimilarity in reference not only to the coloration but as to the size of the papilla by different authors. Take for instance the now classic work of Liebreich. Consult his Table II. where he gives the upright image in normal eyes of brunette, blonde and African. To me the papilla of the eye of the brunette looks the same size as a nickle, which is larger than I think I ever saw it in the upright image in health, and it is as white to me as absolute white optic nerve atrophy ever looks. On the other hand the papilla of the blonde eye is to me the size of a silver dime, and considerably whiter than it should be, having also a mixture of atrophic gray which we see in tobacco amblyopia frequently. Turning now to the same plates in Table IV. of Jæger's Atlas we find that he attempts to give the same idea to the observer by a set of plates which, while they are a marvel of beauty, still lack something to make them appear natural. To me these plates both of the eye of a light complected, and of a brunette eye have the temporal segment fully as ashen as I have seen it many times in tobacco amblyopia.

On the other hand we have to remember that age has a good deal to do with the appearance of the papilla in health. Take, for example, the papilla of very aged people. We often see the papilla dirty ashen while there is present good vision. No longer than a week ago I had a similar experience in the person of a lady 73 years old, highly presbyopic, where not only were both nerve heads very, very white, so much so that when I first looked at the eye in which she thought the sight was decreasing, I could hardly refrain from declaring at once that the nerve was atrophic; and yet upon testing the vision after correcting the refraction I found quite good sight. In this case the arteries were quite small, even threadlike, and I could see the interstitial connective tissue of fibers between the nerve fibers of the papilla, apparently in the state of well-marked sclerosis. In the other eye I found a similar condition, yet not so well-marked. I was quite glad I had been cautious and deliberate about a diagnosis until after the refraction was looked into, for I should have pronounced such an eye hopelessly blind upon the ophthalmoscopic appearances alone, whereas the sight was good in both eyes.

During the past five years I have taken occasion to study the appearance of the papilla in as many cases as excuse or opportunity would permit, and have been frequently astonished at the variety and dissimilarity of different optic nerves as to coloration, in eyes apparently healthy, and the more I see of this matter the more I am convinced that much remains yet to be learned in this field. Whether we see what we think we see, or what we really see, is a matter not always easy to determine. The intensity of the illumination has much to do with deception sometimes as to colors. I well remember Jaeger used to insist that his large, clumsy, unsilvered mirror was even better than the plane mirror in the upright image, especially if retinitis were present, and I have no doubt in my mind that many of the cases reported anomalous are really eyes that look to some extent deceptive on account of too great or too bright illumination, and I am convinced from experience that causes apart from alcohol and tobacco often produce passing changes in the papillo-macular bundle, whereby it shows paler at one time than at another.

DISCUSSION.

Dr. Brunson, Hot Springs.—I am surprised at Dr. Reynolds, being from Kentucky and not being able to differentiate between good and bad whiskey. I am sure I have read of a number of cases in which drinking the essence of ginger and one case in which the essence of cinnamon has caused amblyopia, and in every case it was found that the essence was made of wood alcohol instead of pure alcohol. The symptoms related by the doctor have been present in all the cases of this kind of amblyopia.

Drinking wood alcohol alone will bring about these symptoms—inhaling it, even. I saw one case of a negro woman accustomed to going on periodical sprees. She went to a drug store and asked for alcohol. The druggist, not knowing what she wanted with it, gave her the ordinary Columbian spirits or wood alcohol. She took this home and in four hours she was dead. So the wood alcohol was undoubtedly the cause.

Dr. H. V. Würdemann, Milwaukee, Wis.—I agree with the doctor and would think the cause of sudden and complete blindness in Dr. Reynolds' first case was due to ingestion of methylic alcohol. I have seen several of these cases and have been "in at the death" of one case of blindness and supervening death in 24 hours from the inhalation of Columbian spirits used in shellacking the inside of beer vats, and I have also seen another case, and there are two at present in Chicago, one of which I have seen, in which total blindness was first produced by the inhalation of methylic alcohol in the same manner. One man became entirely blind, and the case I saw became so blind he was unable to work: vision reduced to the counting of fingers at 2 m. In all of the cases reported, the first one by Wood, those by Gifford and by Brunson and others, of the ingestion of the essence of Jamaica ginger and the essence of lemon, of plain wood alcohol in the first two cases reported from France, of the drinking of plain varnish in a prison in France, there was complete blindness, followed later by vomiting, then coma. Gifford reported a case of complete blindness which is still alive, and if I remember right, two deaths. That shows the effect of methylic alcohol in persons predisposed towards poisoning by it; everyone is not poisoned by large or small doses of certain drugs. I know that men in the north part of Wisconsin and Minnesota, the Swedes and Indians, too, drink pure alcohol, and I know of their drinking red ink and the various essences which have been recently adulterated by using methylic alcohol, and it has no effect; but in persons predisposed towards poisoning by these drugs, the symptoms result the same as reported by Dr. Reynolds. Methylic alcohol produces sudden and complete blindness, followed by vomiting, eventually by coma. There are a great many causes for amblyopia, and I have seen toxic amblyopia from the ingestion of ordinary wine. They, however, have tended towards complete recovery.

Dr. Jackson, Denver.—I think the poisoning by methylic alcohol is so definite and characteristic in its symptoms that we are just as much justified in making a diagnosis as we would be in cases of small-pox or measles. I think we can say definitely that this was a case of blindness from wood alcohol poisoning, and I think there can be no question of the nature of Dr. Reynold's case. The first of these cases was reported by Dr. Thompson of Philadelphia. It was produced by Jamaica ginger. We find the people are quite given to the use of Jamaica ginger in prohibition districts, but I did not expect that in Kentucky; but wherever and under whatever circumstances, I think there can be no question about these cases. The early or immediate recognition of the cause is of practical importance, because soon all of these cases have gone on to complete blindness. I have seen one case of absolute blindness in one eye and nearly so in the other. And yet there are a few cases, one by Hunt and one by Stein, that have made a complete recovery, and it is quite possible that a considerable proportion can be brought to good recovery if they are seen and treated early along the proper lines. Such recovery is something entirely different from the apparent recovery that has been alluded to that goes on and reaches its maximum in two, four or six weeks, and then passes away. But it is possible that some of these cases would be brought to relative recovery, at least that useful vision could be preserved. And the way they will be recognized early is by recognizing particularly the unconsciousness and the violent gastro-intestinal irritation that usually precedes the blindness, the violent vomiting, retching and complaint of violent abdominal pain that precede or accompany the early hours of blindness. After I saw the case with Dr. Thompson I suggested that these cases of poisoning by Jamaica ginger were due to wood alcohol. In 1894 and a year later Dr. Harlan of Baltimore published his very careful investigation into the character of these essences that were causing cases of blindness in the vicinity of Baltimore, and demonstrated that without doubt it was the wood alcohol.

Dr. J. J. Kyle, Indianapolis.—I might suggest that these cases take on a medico-legal aspect. For instance, here is an individual that is picked up unconscious on the streets from the effect of methylic alcohol; probably he is a little hilarious, has been struck by a policemen, taken to the station-house, and the man is blind in a few days, or an optic neuritis begins. It is very necessary under such circumstances that we secure a very complete history of these cases when they come under observation. Not long ago I was consulted by the chief surgeon of one of our large railway systems and their assistant attorney, and they asked me the question if by the administration of any drug could there be brought about an atrophy of the optic nerve. You can readily understand they had a case in mind. They probably might assume that this man was intoxicated, and by an injury during a railway accident went suddenly blind. Was the railway responsible or was the man responsible for the loss of sight? I believe there is a field for further investigation in the medico-legal aspect.

Dr. A. Alt, St. Louis.—Dr. Jackson said that the symptoms in Dr. Reynolds' and similar cases are so characteristic that he could make the diagnosis at once that wood alcohol poisoning had taken place. I doubt if we can affirm as much as the doctor did, because I have seen cases of toxine poisoning, as from foul fish and meat, present the same symptoms at first. The symptoms are very much alike; although I also believe that in his case Dr. Reynolds had to deal with one of methylic alcohol poisoning.

Dr. Derrick. T. Vail, Cincinnati, O.—I have a little experience in this. I have seen three cases belonging to the same class. One case was a man whom I saw almost when the attack came on, that is, twenty-four hours after the onset of the symptoms. He was just recovering from absolute deafness, was entirely blind, crazy and did not know where he was. He had imbibed a quantity of whiskey and quinine from a corner drug store. That case was singular to me on account of the fact that, although I saw him within forty-eight hours after he began taking this crude nostrum of quinine and whiskey, there was already a most marked atrophy of the optic nerve and narrowing of the vessels, so that I could not but believe that he had been blind, or partially so, for months and years. The arteries were reduced to the merest lines. The optic disc itself was quite atrophic in both eyes; could not tell day from night. He was also deaf. After a few days of quiet his hearing returned and his sight improved. The case has been reported. It especially affected the papillo-macular bundle. The second case came to me in my own practice and was the case of a man who became blind from quinine and whiskey taken fifteen or twenty years ago after an attack of fever and ague. The appearance of the optic disc and some of the blood vessels was peculiar and to me quite interesting. He had a central scotoma and a peripheral contraction of the field. The third case I saw about a month after the blindness had partially and the deafness had completely passed away. There was likewise atrophy of the disc and the same field, only the central scotoma was not so large. Vision $^{20}/_{70}$. There was also contraction of the periphery of the field. I regard this as the typical field in cases of toxic amblyopia.

Dr. Dudley Reynolds, Louisville (in closing).—I am grateful to the gentlemen who have favored me with their discussion. Dr. Brunson considers my first case a typical case of wood alcohol poisoning, yet he makes no mention of the central scotoma always present. He also fails to mention that in peripheral varying of the field in alcohol poisoning the picture is, as Dr. Vail says, symmetrical—not absolutely, but nearly so. In my case the temporal portion of the field was absolutely blotted out in the right eye and only an extremely small portion in the nasal side. In the left eye the contraction was irregular on both sides, and no evidence of central scotoma. A patient who can barely count fingers and has no color perception necessarily presents some difficulty in determining a central scotoma, but if it were alcohol poisoning it would be complete and not like in tobacco amblyopia, where the scotoma is incomplete. These cases in this respect differ from the typical cases of wood alcohol poisoning, as I understand it. Dr. Brunson mentioned the facts "as nearly as he could remember" that he had read of a case of cinnamon poisoning. If it is true that wood alcohol is used in making these essences, then the drug by which the name of the essence goes manifestly has no effect. The cases are reduced to the plane laid down by some of the gentlemen in the discussion; but I do not think my case was so plain as Dr. Jackson and some of the others did. Yet I have no means of knowing with what kind of alcohol this essence was made. I investigated this subject of the effect of toxic drugs on the visual perceptions and published a paper in 1874 or 1873 in the *Nashville Journal of Medicine and Surgery.* I looked up the literature a little and had had some experience and cases of alcohol poisoning were mentioned. Poisoning by quinine, etc., was mentioned. In these the contraction of the peripheral field is the only phenomenon. In the case of Dr. Würdemann the fields show an extremely minute central scotoma and the peripheral contraction is perfectly symmetrical; and that is like the classical cases in the literature on the subject. In all the cases of quinine blindness I have seen, and I have seen a good many, there was symmetrical contraction of the field. I have seen no case of alcohol amblyopia that did not present a central scotoma.

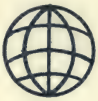
Dr. Stillson, closing the discussion.—I would be glad to have some help along the lines of the paper I read in determining the physiological departure that we term pallor in these cases where we have amblyopia without total blindness when drugs, alcohol or tobacco must be ruled out. I do not know the experience of others in this field but it seems to me I surely have been unfortunate in running across a number of these cases, or else my judgment has been in error. But I certainly have seen such cases where the alcohol must be ruled out. I have not had any case of wood alcohol blindness come up in my private practice, but I have a marked case now where alcohol and tobacco both are the cause of the amblyopia. I should also like to get some help, if possible, as to the question which I tried to bring out in my paper, concerning the normal size and color of the papilla.

IMPLANTATION OF A WIRE BALL WITHIN THE ORBIT.

By OTTO LANDMAN, M.D.,

TOLEDO, O.

THE ball consists of seven verticle complete circles of silver wire and three horizontal complete circles soldered at their intersections. The wire is about one thirty-second of an inch in thickness; although this is immaterial, so long as the ball is substantially made. Three sizes can be used—eleven, twelve or thirteen millimeters in diameter. The eleven millimeter ball will serve in almost any case.



After enucleation or evisceration in the usual way, the ball is introduced with ordinary dissecting forceps, and is held within the sclera or Tenon's capsule and covered with the tissue by means of three or four sutures passed freely through the tissues, conjunctiva and muscles, and securely tied. A coarse black silk suture is to be selected, which will avoid cutting through the parts. The advantages of this form of ball are: Its lightness; the ease with which any jeweler can make one; it obviates the necessity of any specially devised instrument for introducing it, as in the case of smooth metallic spheres; of *most importance* is its solid *retention* within the tissues by granulation tissue springing up between the wires and binding the ball down permanently.

The smooth metallic balls are often extruded, because there is no such arrangement in them to anchor them. The wire ball forms an excellent movable stump, without any sinking in.

These silver wire balls may be obtained from Messrs. Meyrowitz Bros., New York.

CORRESPONDENCE.

HELMHOLTZ AND THE OPHTHALMOSCOPE.

Baltimore, April 14, 1902.

Editor American Journal of Ophthalmology:

Dear Sir—It is the cuttlefish, I believe, described as a marine mollusk capable of swimming backward as well as forward, and endowed with marvelous dodging capabilities, that when it is hard pressed gets itself out of harm's way by ejecting an inky fluid—by befogging the issue, so to speak. It is a clever device, and, though not heroic, is often effectual, enabling the creature to extricate itself from positions which it finds no longer tenable.

Dr. Burnett (in his communication apropos of Helmholtz and the Ophthalmoscope in the March number of your journal), in trying to make it appear that I had said in my letter in the previous number something entirely different from what he must have known I did say regarding the "fundamental problem of ophthalmoscopy," and, further, in attempting to explain why Helmholtz employed only concave lenses in his opthalmoscope, and why he held that a clear view of the fundus of the eye could not have been obtained with Babbage's instrument because it was not provided with such lenses, furnishes an excellent example of the cuttlefish's muddling method.

Having regard for your space and for the patience of your readers, I shall not attempt the clarifying process, for it is a bootless task, and doubtless when scarce completed would have to be begun anew to meet a fresh outpouring of the same "inky fluid." As the lesser evil, I beg to leave Dr. Burnett in possession of the field which he has so successfully befogged. Very truly yours,

Samuel Theobald.

ABSTRACTS FROM MEDICAL LITERATURE.

By W. A. SHOEMAKER, M.D.
ST. LOUIS, MO.

EXAMINATION OF OCULAR FUNDI OF ANIMALS.

One of the most remarkable scientific investigations of modern times is now being brought by Dr. Lindsay Johnson, F.R.C.S., to the close of its earlier stages. Some years ago he began to examine the fundi of animals, and betook himself to Jamrach's collection of animals and other menageries, and found the macula lutea present in monkeys, but that it varied with each genus. Following up his clew, he discovered that every family of the mammalian order possessed a distinct appearance of its own in the eye, by which anyone seeing the fundus with an ophthalmoscope would be able to recognize not only the family but the genus of the animal.

He then proceeded systematically to examine all the animals to be seen in the Zoological gardens of London, Antwerp, Amsterdam, Hamburg, and elsewhere; and, as a result of this gigantic labor, he found many new and striking facts. For instance, he realized that certain organs, such as the pecten, were also to be found in a large number of the lower mammals—rodents and marsupials. This, of itself, was an interesting piece of evidence in support of the Darwinian doctrine of evolution; his various discoveries are to be found recorded in the proceedings of the Royal Society.

His method of investigation is interesting. To examine the eyes of the animals it was necessary for Dr. Johnson to darken the cage, to sit beside the animal with a lamp behind his head, and to look through the ophthalmoscope at a distance of half an inch from the animal's eye, for a period of not less than two hours at a time. The total time spent over each animal would vary from eight to sixteen hours.

He examined the eyes of about a thousand animals, and made drawings of about two hundred and fifty, some fifty of which have so far been published by the Royal Society.

In the cases of the larger animals it was necessary to confine their movements. Thus the elephants were chained down. Sacks some eight feet long were made for slipping over the bears. The closed ends of the sacks were next slit with a knife, and as bruin protruded his head he was promptly muzzled and lifted on to the table for eye testing. In the cases of lions, leopards, tigers and large cats, muzzles could not be used, as they frightened the animals nearly to death. He found it advisable to cut off the whiskers of the brutes, as the touching of the whiskers during examination made them snap. Some of the birds were induced to thrust their bills into large corks, and the fishes had to be treated gingerly to avoid their suffocation. The boa constrictors and pythons were thrown into sacks, to circumvent their squeezing propensities, and their heads were held out of sacks by keepers; while with wolves, bears, otters, seals and sea lions, nets were thrown over them and they were twisted into the meshes.—*Ophthalmic Record.*

CAUSE AND TREATMENT OF PHLYCTENULAR CONJUNCTIVITIS.

R. Hilbert (Sensburg) examined 100 children afflicted with phlyctenular conjunctivitis, and found swollen scrofulous glands in 73, scrofulous eruptions in 22, and rachitis in 5 cases. He insists that this association with scrofula is not a mere coincidence, and advocates treating the scrofula as well as the phlyctenule. He has found cod-liver oil and codeine the best constitutional remedies, and uses insufflations of calomel or ung. hrg. flav. in the eye once daily. If codeine is being given internally calomel should not be used in the eye on account of the danger of the formation of corrosive sublimate. The author considers caustics decidedly injurious.

BROWN-SEQUARD INJECTIONS IN THE TREATMENT OF ATROPHY OF THE OPTIC DISC.

B. Castresana (Madrid) has been making a systematic test of this remedy in both gray and white atrophy.

Vision was improved in every case, but not restored to normal. The improvement subsides after the injections are suspended, and he proposes to resume them every two or three months in order to maintain the benefit desired.

THE AMERICAN JOURNAL
OF
OPHTHALMOLOGY.

VOL. XIX. JUNE, 1902. No. 6.

ORIGINAL ARTICLES.

IS THE DISLOCATION OF THE LENS INTO THE VITREOUS EVER JUSTIFIABLE ?*

By GEORGE F. SUKER, M.D.,

Professor of Ophthalmology in the Post-Graduate Medical School; Clinical Instructor in Ophthalmology in the College of Physicians and Surgeons, University of Illinois.

CHICAGO.

RECENTLY several articles have appeared, notably one by Powers of England, wherein a plea was made for the occasional performance of an operation for cataract which at present writing is deemed obsolete. I bear reference to the operation of sclero- or keratonyxis, or, as it is more commonly called, depression of the lens. I say a plea is being made, and it is indeed a plea worthy of our sincerest recognition, though many may think no good ever rested in a sclero- or keratonyxis. But the points about to be presented may induce a change of opinion, or perhaps the discussion may so evolve the matter as to be in itself a veritable plea for the occasional performance of said operation in selected cases.

At the present acme of our ophthalmic practice and surgery it may indeed seem like attempting a retrogression instead of an onward progression in endeavoring to proclaim any good for an apparently so remotely relegated operation as "depression." Yet, in spite of this acumen in our surgery of to-day, a few of the "surgical procedures of ye ancient times," when viewed and practiced under the dictum of modern asepsis and antisepsis and applied in selected cases, will be found to be *secundum artem*, as well as to be good surgery and practice. One of these very few methods is the operation of depression itself.

---

*Read at the meeting of the Western Ophthalmologic and Oto-Laryngologic Association, held at Chicago, April 10, 11 and 12, 1902.

The plea is made for the failures resulting from the extraction method, a part of the so-called five per cent. of failures in our present day cataract operations. In addition, it is a plea for such patients upon whom no one would think of performing a linear extraction, or any other kind of cataract operation, save it be the depression; because, as we shall see later, the condition of the patient is such as to positively preclude cataract extraction. The latter perhaps are but ¼ per cent. to ½ per cent. of the entire number of cataracts presented for operation.

The term dislocation was chosen in place of scleronyxis, keratonyxis, depression or couching—firstly, because all are a dislocation in the true sense of the word; secondly, because we are all more or less familiar with a dislocated lens in the vitreous body, rather than with a couched or depressed lens. This being so, the range of discussion will be larger, broader, and of more value. For, the changes in the eyeball incident to a scleronyxis are the same as obtain in a complete posterior dislocation of the crystalline.

In determining whether or not the scleronyxis has a substantial status at the present day, we must ascertain the probable indications and results that follow such a method.

Again, it is the pathological or pseudo-physiological process, if you so please, which obtains in any operation that more or less determines its legitimacy as well as its feasibility. Furthermore, if we, by any logical operation as a substitute for an extraction, can reduce the percentage of failures now prevalent in extraction, or if we can revive a method by which we can operate upon those whom our judgment now gainsays an operation because the present mode of cataract extraction is for them deemed inapplicable, then certainly this plea is opportune and well taken. As in everything, so in this question of a depression, it is largely a measure of good judgment.

True indeed, the physiology of the eye has undoubtedly stamped scleronyxis as inferior to extraction as a universal procedure. Yet the exigencies of certain cases, which place them beyond the pale of the extraction method, even to-day would demand an interference, though an obsolete method has to be resorted to in order to accomplish the desired object. This is so because one method offers a probable chance of success; the other the same probable chance of failure.

Neither time nor space will permit the writer to recall to you the valid reasons why sclero- or keratonyxis are now practically obsolete. Suffice it to say, that chloroform, cocaine, asepsis, antisepsis, improved surgical technique, and the physiology of the eye have been the potent factors in causing the universal adoption of the linear extraction for cataract. However, as we all know, even this ideal method of cataract extraction has in certain cases, under certain conditions of the patient, no justification in its execution, because the element of danger and failure outweighs the element of probable success. When the latter conditions present themselves, it behooves us to consider the other methods at our command, and one of these methods is depression.

Now, in what class of cases would a scleronyxis be justifiable? Without elaborately detailing all the reasons why, but only mentioning the salient ones in a few, we may include in this category:

1. The insane.
2. Epileptic.
3. Hæmophilic.
4. Cases with a tremulous iris or fluid vitreous, but without choroiditis or retinitis.
5. Cases with incurable dacryocystoblenorrhœa or conjunctivitis.
6. Extreme old age, with its attending infirmities.
7. Cases with incurable bronchitis and cough.
8. Cases in which one eye was lost by suppuration, and indications pointed strongly to the same fate if the other lens was extracted.
9. In shrunken and secondary cataracts—*i. e.*, secondary to some inflammatory reaction.

10. In partial posterior dislocations with tremulous iris.

This list of cases comprises perhaps all the conditions in which a reclination could in any light be considered as justifiable or feasable.

By giving each one of this classification a careful and scrutinizing consideration, you will not fail to find that each at times will present suitable cases for a scleronyxis; and that, on the other hand, it would be bad surgery to perform extraction in such given cases, the wiser plan being not to operate, save it be by depression. At the same time, this class of cases includes the majority which are now lost by the extraction method. Please to bear in mind that the writer is in no way arguing for the universal application, but only for the exceptional cases in which depression is indicated.

Richardson Cross recently made the sweeping statement that he had never seen any harm or degeneration result from the presence of the lens in the vitreous. This certainly must be taken *cum grano salis*. Perhaps he had reference only to such cases in which it was the only operation offering a reasonable success. No doubt this is true. For Quaglino of Pavia, who, though a partisan for extraction, was compelled to resort more often to depression in his cases of cataract in Lombardy, because the surroundings and condition of the peasants would permit of no other, says the accidents most frequently observed are: the rising up of the cataract, iritis, iridochoroiditis, ciliary neuralgia, secondary cataract, and acute glaucoma.

On taking these accidents into consideration, they compare quite favorably with the ones we now and then have when the lens is extracted—e. g., panophthalmitis, excessive loss of vitreous, detachment of the retina, excessive suppuration of the wound, and prolapse of the iris with its occasional serious consequences. The former complications can be more readily controlled than the latter. Again, depression is indicated in just such cases, lost by an extraction because of said accidents, when we have to operate on the fellow eye. It is well known that where one method fails another often succeeds admirably. However, please note that depression is never indicated when a retinitis or a choroiditis is present.

Followers of the Vienna school, such as Fuchs and Elsching, even to-day recommend a depression in shrunken and secondary cataracts. If it is ever indicated in such cases, it is certainly in cases we know would be lost by the extraction method, even if this latter percentage is exceedingly low at present. As far back as 1843, Himly remarked that rarely severe inflammatory reactions followed depressions, and if they did ensue, they seldom left bad consequences. This observation was made among the Hindoos, where even to-day the depression method outnumbers the extraction. That is to say, this is among the native operators. Even to-day in India depression would not be so prevalent were it not attended with a fair amount of success, though performed by itinerants. All English surgeons in India do admit that the successes far outnumber the failures. The Hindoo-European operators only see the complicated cases and failures, and in these they often restore a useful eye by extracting the lens.

Certainly the immediate results in depressing the lens are brilliant. Yet, as Powers says: "It is a difficult matter to say whether under any circumstances the depression would give equally good results, because we have but few statistics at hand that deal with large numbers, or that have been undertaken with the same care and precaution as are now adopted in cases of extraction." Still, in selected cases and under the present regime, the depression is indicated and will yield satisfactory results. No doubt it will always be the operation of last resort, and properly so. But this does not say that at no time would indications ever present themselves, as they surely do, though few.

Von Graefe, in 1858, advised reclination in old and decrepit cases, or such as had lost one eye by suppuration and in which indications pointed to the same in the other eye if it was similary operated upon. His remarks hold good to-day, though they were made prior to the period of Listerism. Certainly to-day the depression operation would yield better results in such cases as were lost by the extraction and are even now lost at present, though performed aseptically.

Lately, Posey of Philadelphia quoted several successful depressions in the violent insane, with great mental improvement. Who would undertake the extraction in such cases?

But few, we think. For, a certain amount of rest, care and bandage is obligatory in the extraction method. This is not so in the depression of a cataract, as the patient requires scarcely any after-attention. Are not these points often devoutly wished for in the class of cases just mentioned? And, because we cannot attain them if we extract the lens, we abandon sight for the patient, and thus retard his mental improvement. Is not this also true for the epileptic, extremely aged, as well as for the flabby and phlegmatic patient? These patients are more prone to complications than the more wide-awake and robust. How often is an inveterate chronic bronchitis with a cough the cause of total loss of the eye, or an obstinate catarrhal conjunctivitis or dacryocystoblenorrhœa the cause of a fatal suppuration. In these cases, by means of minimum surgical interference we attain the greatest good and run the least danger. Then, too, how often is it that it is only a matter of a few years the patient has to live that sight would be precious, yet is denied because of valid reasons for not extracting, but no valid reasons for not depressing the lens.

Though a cataract is rare in the hæmophilic, yet who would be so rash as to extract it? Depression here is absolutely safe, and certainly indicated if anywhere.

Again, in cases of tremulous iris and fluid vitreous, with a deeply-set globe and a readily-shifting lens, who cares to endanger the eye by excessive loss of vitreous? Even if in these cases the immediate injection of a normal salt solution would restore a plump and very useful eye, provided it was successful, it would be difficult to perform. Still these are chances and indications one would not care to look for, but rather avoid in every possible way.

Just as a few substantial reasons have been given for performing a reclination instead of an extraction in the variety of cases just alluded to, so can valid reasons be assigned for the remainder of the category spoken of in the earlier portions of this paper. But, as there are others yet to read, no mention will be made of them. We will not discuss the method of operating, as this is not the purpose of the paper; we wish only to speak of the indications.

A word or two concerning the attending complications in performing the reclination may not be amiss. As already stated, iritis, irido-choroiditis, ciliary neuralgia, acute glaucoma, and secondary cataract are the main ones. The rising up of the depressed lens is not to be looked upon as a serious complication. Each and every one of the other complications can be promptly and properly met with in a medicinal way. Should this prove of no avail, the removal of the lens, as in the occasional rising up of the lens, or an iridectomy, can be attempted, and success still follow. Statistics of the older operator and of the modern, who often find a traumatic reclination to deal with, will bear out this point (vide references).

It is a noticable fact that the results following a traumatic dislocation of the lens into the vitreous, the injury in and out of itself was often sufficient to cause said complications. But very seldom do any complications of any serious nature supervene when the lens has been dislocated by an indirect trauma or a trauma not directly affecting the eye, though on the same side. A study of some of the references given below will show that a traumatic depression was often followed by good vision, lasting for years. This, in part, is true of the operation of depression itself, as it practically causes little or no interference with the eye. In fact, the pathological changes in the eye due to the lens being in the vitreous are the same whether the lens is depressed by an instrument or a trauma. The suspensory ligament and the zonula of Zinn are not more often torn by a trauma than by a reclination. However, should the reclination be a success, the vitreous will always have some opacities, but these seldom interfere with vision to any great extent, whether the lens is reclinated or dislocated by a trauma.

The English surgeons who have served in India often speak of the brilliancy of the results in reclination as obtained by the native operators. And to-day it is perhaps only the English surgeon who performs a reclination in selected cases. In this connection with reclination, it may be probably of interest to note the last scientific statistic made before the operation passed into desuetude. This is the last series of 26 cases operated upon by Quaglino of Pavia in 1867.

In this series there were twenty-five successes and but one failure—a goodly showing indeed.

In briefly summing up the most salient points of the paper, we may tabulate them as follows:

1. The percentage of failure in the class of cases in which a depression can be performed is no larger, on the contrary less, than in the same cases operated upon by extraction.

2. Do not depress a lens in cases with choroiditis or retinitis.

3. Consider depression in all cases where one eye has been lost by an extraction, and conditions point convincingly to the same in the other eye.

4. Depression of the lens must not be indiscriminately performed, but only in such cases where the contraindications for extraction outweigh its own objections.

Finally, the writer considers reclination of the lens as an exceptional procedure, and can only regard it as unquestionably indicated in such a class of cases as has been alluded to, when the general constitution of the patient or the previous experience with the fellow eye unhesitatingly point to a failure if the extraction method were resorted to. It should rarley be performed; for it is only in rare instances that suitable cases present themselves. In any given case, weigh full well the pros and cons of either operation, and, if the balance is in favor of one or the other choose that one, be it a reclination or an extraction.

As it is largely a matter of good judgment and discretion, we have no cause to find fault with anyone who exercises his prerogative as a physician and thus practices *secundum artem*, though he does resort to a method at present cast into oblivion and only receiving a bare mention in the modern text-books as an historical operation.

REFERENCES.

1. Noyes, H.—Diseases of the Eye: Text-Book, p. 449.
2. Indian Medical Gazette, June, 1901.
3. Powers—A Plea for the Occasional Performance of the Operation of Depression in Cataract: British Med. Jour., Oct. 26, 1901.
4. Schmidt-Rimpler—Augenheilkunde, Text-Book, p. 374.
5. Fuchs—Text-Book on Ophthalmology, p. 700.
6. Norris and Oliver—System of Eye Diseases, Vol. III., p. 794.
7. Bull, G. S.—N. Y. Med. Journal, Vol. LII., p. 262.

8. Walker, Cyril H.—London Lancet, Sept. 17, 1892, p. 663.

9. D'Oench—Congenital Displacement of Lens, Contribution to the Knowledge: Archives of Ophthal., Vol. X., p. 89.

10. Landesberg—Spontaneous Dislocation of the Lens in Both Eyes: Zeh. Monatsbl. f. Klin. Augenheilk., June, 1881, p. 251.

11. Quaglino—On Scleronyxis: Ophthalmic Review, Vol. III,, p. 371.

12. Von Graefe—On Cataract: Ophthalmic Review, Vol. I., p. 243.

13. Wilder, W. H.—Dislocation of Lens: Chicago Med. Recorder, 1892, Vol. III., p. 460-465.

14. Theobald—Report of a Lens Totally Dislocated into the Vitreous and Retention of Useful Vision: Tr. American Ophthal. Soc., N. Y., 1881, Vol. III., p, 225-228.

15. West, S.—Posterior Dislocation of Lens: Tr. Ophthal. Soc. U. King., London, 1882 and 83, Vol. III., p. 100.

16. Wilson—Accidental Depression of an Opaque Lens: Ophthal. Hosp. Rep., London, 1860 and 62, Vol. III., p. 65.

17. Schel—Ueber die freiwillige Dislocation u. Niedersenkung der Linse: Ztschr. f. d. ges. Med., Hamburg, 1846, XXXII.

18. Noyes—Luxation der Linse in das Corpus Vitreum: Ber. a. d. Versammel. d. Ophthal. Geselschaft, Stuttgart, 1884, XVI., 90-96.

19. Higgins Displaced Crystalline Lens Floating Freely in the Vitreous Chamber: London Lancet, 1892, Vol. II., p. 812.

20. Martin, W. On Operations for Cataract Among the Natives of India: Ophthal. Hosp. Rep., London, 1858, i, 161-168.

21. Robertson, J. A.—Observations on Extractions and Displacement of Cataracts: Edinb. M. and S. J., 1837, Vol. XLVII., p. 378-390.

DISCUSSION.

Dr. A. Alt, St. Louis.—The question whether with our present knowledge depression of the lens is still a justifiable procedure has of late been discussed by Andrew, Rampoldi, Businelli, Valude, Truc, Panas, Dor and Gayet. All of them reported certain cases in which they thought themselves justified in not attempting extraction of the cataractous lens, and the results seemed to bear out their reasoning. However, Wassilyeff and Andogaki (*Klin. Monatsbl.*, August, 1901,) when reporting on a series of experimental studies, on the reclination of cataracts in rabbits, sum up their findings by stating that reclination causes a great many more complications than extraction, and that it is successful in only a small percentage of cases. The complications were chiefly detachment of the retina, iridocyclitis and obliteration of the iris angle. They think, therefore, that reclination is a justly abandoned method of cataract operation. The author mentioned as one sort of cases for reclination, such in which one eye had been unsuccessfully operated on by extraction. These cases, I think, should, as a rule, not be included in the cases in which reclination would be justifiable. I have had time and again occasion to extract a cataract successfully in which an unsuccessful operation on the fellow-eye had preceded. I could only think of one reason, and that is when the patient would rather remain blind than to allow the extraction of a cataract from the second eye. In my opinion extraction should be the rule in all cases, except, perhaps, in very old and feeble subjects, whose death is more or less imminent and who would give anything to be once more able to see the faces of their loved ones, before parting.

Dr. Jackson, Denver.—When I commenced to practice I knew a gentleman who had studied in Paris in the 50's who did most of the ophthalmic operations in that section of the country and who, I think, never did an extraction. He did reclination altogether. I knew some of his cases some years after it was done and I do not know of any that retained vision more than five or six years after the operation. I am inclined to think that we do not have any statistics, except those which we find in the books of the middle of the last century, at least I do not recall any now, that are gathered with reference to the ultimate results. I think it would be rash indeed to answer the question of the title of the paper in the negative, but I think I have never seen a case in which I would consent to risk the reclination. We see in cases of dislocation of the lens into the vitreous body, whether traumatic or congenital, that secondary glaucoma is very apt to develop. With reference to cataract extraction in the insane, I recall one case in which one eye had been lost and in which I was called upon to operate upon the other eye and got a good result without complication. With reference to epilepsy, I recall a young woman about 30 with cataract in both eyes, on which I did extraction. She had an epileptic seizure in a few days after the operation, yet everything went well. A case of violent epileptic convulsions a day or two after extraction was shortly reported in *American Medicine*, and in this case there were no complications. At the same time I agree with Dr. Alt, that in extremely feeble persons who are not going to live very long, and with perfectly asceptic conditions, I think the operation would be justifiable.

Dr. Kyle, Indianapolis.—I would like to ask Dr. Suker what he thinks the result would be in dislocation of the lens in cataract cases complicated with diabetes.

Dr. Reynolds, Louisville.—I remember having seen the published statement that a few cases of reclination of cataract enjoyed good vision for about two years, and I think five years was found as the limit of useful vision. A thorough study of cases since that time has gradually extended the field of observation without increasing the period of time which elapses after what is called a successful reclination before complete blindness ensues from intraocular changes. I had a remarkable experience three years ago. A young woman less than thirty years of age had diffuse choroiditis in the right eye, followed by shrinkage of the optic disc and extinction of sight. One day she was playing with one of her children, leaning over on her right elbow on the side of the bed, when the little one, about two years old, struck his mother with his fist in the left and good eye. The eye became very much inflamed and a surgeon attempted an iridectomy, who had never used Jaeger's sclerotome, the triangular instrument. When he placed the point of the instrument, to make the puncture, the eye was suddenly turned up and the knife driven straight in, cutting off the periphery of the iris. Vitreous body escaped and he closed the eye up. I was sent for to see the case in consultation with the family physician and the gentleman who had done this unfortunate operation. I counseled rest in bed, muriate of pilocarpine, followed by sodium salicylate and exclusion of light from the eye. The patient made a perfectly satisfactory recovery except as to vision, and when the eye was uncovered the lens was found to be depressed. The lens being pushed downward, the patient enjoyed better vision over the dislocated lens by turning the head down. I hesitated about extracting that lens. I could not assure the patient of a strong probability of success that she wanted, and she was taken to Cincinnati where the operation was declined. She afterwards went to Pennsylvania and New York, and two years time elapsed and everybody advised against the operation. She returned to me imploring me to operate. I studied the case with deliberation and decided to extract the lens, but while I was sure of my ability to get it out, I was not sure of the amount of vision she would have. I extracted it without difficulty of any kind, and she is now able to read long primer type, and has gone on nearly ten years in that condition.

Dr. Suker, (closing discussion of his paper).—In answer to Dr. Reynold's point as to the number of years of useful vision following dislocation of the lens in the vitreous body, statistics will go to show that useful vision is often maintained for a period of from 15 to 20 years and sometimes longer. Bull, Wilder and Ayres, in the *Archives of Ophthalmology*, cite a series of cases in which the lens was depressed by traumatism, and useful vision had remained all the way from 10 to 15 years. Some of these cases came later on for operation on account of secondary glaucoma. Here, however, the proper surgical interference checked or relieved the glaucoma and the patient still enjoyed useful vision. I have a man under observation now who had his lens depressed some 30 years ago as the result of an accident. Though he has vitreous opacities, still with a 5 diameter lens he gets a vision of $^{20}/_{60}$; therefore I do not see that the question of time for which useful vision might be saved should constitute a point of contra-indication for the operation in suitable cases. With reference to Dr. Jackson's remarks in regard to epilepsy, I would say that an epileptic attack three or four days after the operation of extraction could produce but little harm, because by this time the corneal wound has sufficiently healed so as to be able to sustain any violence that an epileptic might undergo, save a direct injury to the eye. However, an epileptic, having 10 or 15 or more attacks during a day, is not the best patient upon whom to perform an extraction. I should, personally, prefer not to be the operator for an extraction in an epileptic if an attack should occur while he is on the table. As far as the reports of the operations are concerned with reference to the insane, they are good. In answering Dr. Alt's references to pathological changes following a depression, it is true that a lens depressed in the lower animals, especially the cat and a dog, as a rule produces serious complications. But why this is so and not so in man, is a point as not yet decided, for we do know that the human eye does tolerate a depressed lens, oftentimes for almost an indefinite period, with but slight pathological changes. However, a depressed lens will always produce more or less vitreous opacities, and when there is a retinitis or choroiditis present, these are intensely aggravated. Hence, a depression is not indicated in such cases. Still, the vitreous opacities ensuing do not so materially interfere with the vision, and in such cases the vision obtained is often equal to that in like cases in which an extraction has been performed. In old people, on the other hand, the lens having been extracted under aseptic measures, the eye may still be lost, because the surgical interference is such a great shock that the ocular tissues suffer actual death in consequence thereof, and make a fertile ground for any suppurative process. It is just in such cases where the personal resistence or vitality is of such a low state as to preclude any other operative interference that depression is indicated when the other eye has been lost by suppuration. Dr. Kyle asked the question whether reclination is indicated in diabetes. I will say that I never considered diabetes as an absolute contraindication for extraction. Very seldom do we have any trouble in the healing of the wounds in such cases, provided the patient has previously undergone a thorough course of general treatment. I should think, however, that a depression in diabetes would be contra-indicated, for the reason that in such cases there might be a lurking retinitis or choroiditis which would eventually grow worse because of the presence of the lens in the vitreous body.

PAMPHLETS RECEIVED.

"Psychic Treatment," by E. C. Runge, M.D.

"Operation for Ptosis," by W. H. Wilder, M.D.

"Treatment of Epistaxis," by J. M. Kershaw, M.D.

"Leukosarkoma de l'oeil et de l'orbite," by Prof. Badal.

"The Treatment of Strabismus Other than Operative," by E. Jackson, M.D.

"Rapport sur la cécité et les aveugles en France," by Drs. Trousseau and Truc.

"The Class of Cases of Simple Chronic Glaucoma in which Operation is Not Advisable," by Ch. S. Bull, M.D.

"The Treatment of Thrombosis of the Lateral Sinus Following Middle Ear Suppuration," by E. B. Dench, M.D.

"Metatastic Choroiditis in the Course of Pneumonia Due to Grippe, Based on a Study of Six Cases, with Two Autopsies," by Ch. S. Bull, M.D.

A CASE OF SYMPATHETIC OPHTHALMIA, WITH COMPLETE RECOVERY OF BOTH EYES.*

By DERRICK T. VAIL, M.D.
Oculist to Cincinnati Hospital, etc.
CINCINNATI. O.

I REGARD the following case to be of sufficient rarity and interest to justify its report. It illustrates a type of sympathetic ophthalmitis which is amenable to treatment and which yields kindly to therapeutical measures and good nursing.

The principal object of this paper, aside from the case report, is to lay especial stress upon the value of the one great therapeutical agent—darkness—total darkness and complete rest for the retina and accommodation in the treatment of this and allied affections of the eye.

The writer has long had the opinion that all cases of inflammatory affections of the iris, ciliary, choroid. retina and optic nerve should be treated by *total darkness*, for it seems a fair and just argument that inflamed ocular tissues need rest and suspension of function quite as much as that a broken bone needs rest and a splint that secures complete functional abeyance.

Sympathetic ophthalmia is really a disease of rare occurrence, considering the number of eyes that are daily injured, but we have all seen it, and have felt the sinking of the heart when a case of injury that we have watched from the first comes in with irido-cyclitis of the good eye. It is a live subject, and interests us all, for the circumstances surrounding each case and its individual peculiarities are such that it never becomes hackneyed.

A few axioms we have learned from our own experience and the experience of others, e. g.:

That after the disease is once thoroughly started in the good eye it is generally too late to enucleate the injured eye.

That all operations (iridectomy, paracentesis, etc.) done with an attempt to stay the progress of the disease or bring about a healthy reaction usually have just the opposite effect.

That sympathetic *irritation* is one thing and sympathetic *inflammation* entirely different, the two being apparently in no wise connected; for the latter usually appears without any prodromal signs—it comes like a thief in the night, unannounced and quite unexpected.

---

*Read at the Western Ophthalmologic and Oto-Laryngologic Association, Chicago, April 10, 11 and 12, 1902.

That the kind of injury which produces sympathetic inflammation is usually a penetrating wound of the ciliary zone, with or without the entrance into the eyeball of a foreign body.

That there is no rule that can be laid down as to when sympathetic ophthalmia will occur, although the majority of cases develop between two and eight weeks after the primary injury.

That the one disease that produces sympathetic ophthalmia is chronic plastic uveitis.

Although we have gleaned a few facts concerning the clinical manifestations of the disease in question, we know but little of the real modus operandi of the transference of the inflammation from the injured eye to its fellow. Many are the theories advanced, which we read with interest, accept, reject or hold in abeyance, according to our individual fancy.

The following case shows that recovery is sometimes possible even when there is present distinct irido-choroiditis and well-marked neuro-retinitis in the sympathizing eye.

It was a case of penetrating injury to the ciliary zone of the left eye, with hernia of the iris, where an iridectomy was performed through the original wound and a superficial stitch applied to the sclera. There was no evidence of struma, syphilis, rheumatism or malaria present. The patient was a healthy school-boy.

J. D., æt. 14, referred by Dr. M. B. Brady, Cincinnati, O., Jan. 11, 1901. While playing with schoolmates was hit in the left eye by a stick or stone—does not know which. Dr. Brady was called, who, recognizing that there was a penetrating injury to the eyeball, sent the patient to the Presbyterian Hospital, and asked me to take charge of the case. Dr. J. W. Murphy and I saw the patient three hours after the accident.

Status Præsens.—Right eye normal. Left eye—there exists a ragged penetrating wound of the sclero-corneal margin outwards and slightly downwards, half of which is in the cornea and half in the sclera. The wound is ragged, and about 12 mm. long, involving the ciliary zone. Through the lips of the wound there presents a hernia of the iris. The pupil is pear-shaped and drawn to that side. The anterior chamber is shallow, the tension minus, the red reflex normal, and central and peripheral vision good. The patient is surly and objects to operation, and so it is determined to administer chloroform.

The Operation.—Patient takes the anæsthetic well. The eye is sterilized and douched with warm boracic acid solution, the iris grasped with strong iris forceps, and iridectomy performed. Care is taken to see that the cut edges of the iris are liberated from the incarceration by means of a spatula. The wound gaps, and there seems to be a rupture of the ciliary muscle. It is therefore thought wise to suture the sclera. This is done, but care is taken to get only the outer layers of the sclera in the stitch. This procedure gives the wound an excellent appearance, for its edges are now in perfect apposition. Patient put to bed, with both eyes bandaged.

The proper time to mention sympathetic ophthalmia to the patient or his friends is, in my judgment, before any operation is attempted. We have only to keep in mind the kind of injury that produces it, viz.: generally a penetrating wound of the sclero-corneal junction or the entrance into the chambers of the eye of a foreign body. If your case presents this state of affairs, you have only to say to the patient or guardian: "It is the kind of injury that sometimes produces trouble with the uninjured eye through sympathy." This will awaken him to the real possibilities of the case, and will protect the surgeon, at least to the extent that he knew beforehand of the serious nature of the injury. This is exactly what I did, and the mother, who brought the boy to the hospital was thus prepared for what in fact actually occurred.

The Course.—Healing took place by first intention. Atropine daily used in the injured eye. The stitch was removed in six days. The ciliary ectasia disappeared; a firm flat scar formed, and the boy was sent home in two weeks, with the eye well on toward recovery. Visits were made every second day to my office, and in one month from the date of the injury the eye was considered practically well.

The dark shade was still worn, however, and the boy kept out of school and not permitted to read. Two weeks after the injury, R. V. $^{20}/_{20}$, L. V. $^{20}/_{40}$. Ophthalmoscopic examination: R. E., entirely negative. L. E., large string-like opacities in the vitreous, and some considerable exudation and cloudiness in the forward part of the vitreous, corresponding to the seat of the lesion. Optic disk appears hazy, probably due to vitreous opacities.

On several occasions, while the boy was being watched and treated at my office, I warned the mother to keep a sharp lookout on the good eye, and made it a rule to test both eyes myself.

The Sympathetic Outbreak.—On March 2, 1901, viz., seven weeks after the injury, the boy was brought to my office by his mother, who stated that since yesterday he complained of pain, photophobia and blurred vision in his good eye. She had looked at the eye the night before, and noticed the injection of the globe. Remembering my frequent admonitions to watch the good eye she brought him at once, otherwise would have paid no attention to it.

Examination of the uninjured eye (*Right*).—Circumcorneal injection present; tension, minus ½: anterior chamber deep; iris slightly off-colored; pupil slightly contracted; margin of pupil very ragged; *posterior synechiæ abundant—in fact, the entire pupillary margin is glued to the lens capsule*, but ciliary tenderness absent; field of vision normal, and vision $^{20}/_{30}$.

I kept the boy in my waiting rooms an hour, during which time I instilled 1 per cent. atropine solution every 15 minutes and succeeded in breaking up all the adhesions but two.

Ophthalmoscopic examination.—Dioptric media clear, aside from slight murkiness of the aqueous. A ring of iris pigment exists on the lens capsule from synechiæ; *optic nerve head slightly swollen*, veins entering the disk are overfull and tortuous; disk margin not clearly defined.

Examination of the injured eye. (*Left*).—Eyeball injected slightly, (less than R). Scar flat and slightly sensitive; eyeball slightly tender; anterior chamber deep; pupil dilated and coloboma has free edges; lens clear, aside from some pigment dots on the anterior capsule; vision $^{20}/_{50}$.

Ophthalmoscopic examination.—Vitreous contains large mass of floating lymph, seeming to be attached well forward near the floor of the eye just behind the ciliary body and looking like a bunch of cotton. Optic nerve considerably swollen and blood vessels of the disk are enlarged and overfull, the veins being tortuous.

Diagnosis.—Sympathetic irido-choroiditis and neuro-retinitis.

March 3, (next day).—R. E: Pupil now dilated ad maximum and is round; a circle of pigment exists on anterior capsule of lens, showing yesterday's position of the pupillary margin; neuro-retinitis marked, but no exudation present. L. E. same as yesterday.

March 4.—R. E.: Some exudation at the margin of the disk; no floating opacities can be seen yet. L. E: Optic nerve very cloudy, being covered with a fog-like exudate, which extends into the surrounding retina and vitreous.

Dr. Robt. Sattler saw the case with me in consultation. His diagnosis was sympathetic ophthalmia also. A guarded prognosis was given. His advice was against any operation but in favor of watchful care and vigorous local and general treatment. The patient was sent to the Presbyterian Hospital.

Treatment.—Leeching both eyes, four leeches to each temple and two to each side of nose near inner canthus. Atropine drops in eye, 1 per cent. t. i. d. Inwardly, K. I., gtt. x. t. i. d. Patient kept in bed; total darkness.

The object of total darkness was to relieve the congested retina of the task of eliminating the decomposed photo-chemical products resulting when light enters the eye. The more advanced studies of the physiology of sight production teach that the action of light on visual purple (rhodopsin) which normally exists in the healthy retina, is to decompose it into "visual yellow" (xanthopsin) and then into "visible white" (leukopsin), the latter product being slightly irritant to the cones assisting in the sensation of vision. There is also no doubt cellular waste and regeneration, resulting from the action of the light on the retina, which in a normal retina is healthy and physiological, but in a congested one no doubt wearisome and even toxic, because of the faulty elimination of the burnt up cells. In a healthy retina these by-products, the result of actinism, are quickly removed, probably by the lymph stream and fresh visual purple regenerated. This process is repeated with never-ceasing change as long as light floods the eye and in proportion to its intensity. Therefore in this case of sympathetic ophthalmia I determined to give the retina absolute rest. This was done by means of Ring's eye mask. I had it lined with black silk and a piece stitched around the edge like an apron to shut out every vestige of light. This method had the additional advantage that we could air and light the room at times without subjecting the patient's retina to the action of light.

March 13.—The patient was taken to the ophthalmoscopic room of the hospital and the eyes subjected to a short examination, with the following results: Under atropine—R. + 1.0 D. V. = $^{20}/_{20}$. L. + 1.50 C.Ax. 15 V. = $^{20}/_{25}$. The optic nerve and retina of the sympathizing eye still appear misty, the veins tortuous, some exudation exists on the disk and the margins are distinctly fuzzy in appearance. The injured eye (L) shows large masses of lymph in the vitreous chamber and the optic disk can barely be made out, margins not at all, veins swollen and tortuous.

It is remarkable that the vision is so good while the optic nerve and retina are so œdematous. Patient pale; pulse, 100. Took off of K. I. and treatment changed to salicylic acid and ammon carb., mixture, viz:

℞	Acidi Salycil.	ʒv.
	Ammon Carb.	q. s.
	Ol. Gaultheria	gtt. x
	Glycerine	ʒv.
	Aqua menth. pip.	q. s. oz. iv.

Misce. Sig. Teaspoonful every three hours.

The atropine continued once a day and steam baths ordered every second day.

March 18.—Eyeballs not injected; pupils ad maximum; no ciliary tenderness; tension normal; vision, R. and L. $^{20}/_{20}$. Patient exclaims "how clear everything looks." Ophthalmoscopic examination: Sharp neuro-retinitis still present in both eyes; pigment deposit on both lenses, vitreous deposits are clearing. Treatment and darkness continued.

March 25.—No floating opacities can be seen in R. vitreous chamber and those in L. disappearing. Optic neuro-retinitis receding, marked improvement noted in appearance of the eye ground.

It would be tiresome to listen to the clinical notes which I kept from this on; suffice it to say that we kept his eyes in total darkness for six weeks after the sympathetic trouble developed, and continued the steam sweats and salicylate of ammonium mixture internally. The neuro-retinitis gradually subsided in both eyes, the sympathizing eye, being the least affected, was the first to clear up, and on May 3d, two months after the incipiency, was pronounced well. The exudation on the optic disk and retina of the injured eye was slowly resorbed, the vitreous gradually clearing, and on August 1st, five months after the beginning of the attack, the left fundus was also pronounced normal, eyeballs free from irritation.

After recovery, the only evidence that sympathetic ophthalmia ever existed is the ring deposit of brown iris pigment on the anterior capsule of the lens of the sympathizing eye (R.), and the presence of too many arteries and veins emerging from the disk of each eye, but the details of the fundi are perfectly clear and the eyes are apparently perfectly sound.

The last time I saw the patient was a few days ago. It is now a year since the sympathetic inflammation disappeared. His eyes are perfectly well, vision normal in each, no floating opacities in either. The old scar in the cornea and sclera is covered with normal epithelium, and there is not the slightest evidence of inflammation or irritation in either eye. The patient attends school, and is free from all ocular disturbance, subjective and objective.

I have observed in cases of spontaneous detachment of the retina, optic neuritis, and in sympathetic ophthalmia that the pulse rate is high, the quality full, radial artery soft and easily compressible; also that a slight febrile reaction occurs in the evenings. Evidently the entire vascular system, to a slight degree at least, is affected. Perhaps there is a systemic poison at work, which affects the pulse and bodily temperature. This patient had pulse 100 to 110.

From this case we may draw the following conclusions:

That sympathetic ophthalmitis occurring in young persons is often not so violent nor so fatal to sight integrity as the same disease in adults.

That if no foreign body has remained in the eyeball it is often wise to watch and wait.

That the rational treatment is complete rest to the retina and accommodation, which can only be brought about by total darkness.

DISCUSSION.

Dr. Alt, St. Louis.—This is a most interesting subject. It is impossible to know how large the number of cases is in which a cure of sympathetic ophthalmia was observed, but while it is small in comparison to the number occurring, yet there are a series of cases on record. In my own practice I have seen a few such cases. The doctor is to be congratulated on the result in his case whether his particular management of it was the only reason for recovery or not. Whether keeping the patient in the dark and in bed all the time, had the effect claimed for it I have my doubt. I also give large doses of the salicylate of sodium, and can add to the praise given this remedy. Since Gifford reported a number of astonishing results with this drug in sympathetic ophthalmia, I have had one case with severe sympathetic iridocyclitis, with the usual formation of cataract. Large doses of salicylate of soda have dispelled all inflammatory symptoms, and I am now waiting for the time to extract the lens. I want to add my testimony regarding the wonderful effect of salicylic acid in these cases.

Dr. Vail, (closing discussion).—In regard to the frequency with which cures occur, I wish to say that I could find no cases reported in the Archives. Somewhere I found one case of complete recovery of one eye and partial in the other. I think a cure is very rare. No doubt cases have been reported, but I could find no duplicate of this case. Dr. Randolph of Baltimore said there were 19 cases reported in which there has been recovery, but I think he means recovery of the first affected eye.

MEDICAL SOCIETIES.

PROCEEDINGS OF THE OPHTHALMOLOGICAL SOCIETY OF THE UNITED KINGDOM.*

DR. DAVID LITTLE, President, in the Chair.

Meeting on May 1, 1902.

MR. H. GRIMESDALE showed a case of paralysis of the cervical sympathetic. There was slight enophthalmos; the pupil was small, and reacted very badly. Vision was bare P. L. T—3. Cocaine had no action on the pupil nor on the eyelid, and there was a gray reflex in the pupil, possibly a detached retina. Mr. Homes Spicer thought that a purulent retinitis would explain all the symptoms, and he thought the case was one of those usually called pseudo-glioma. Mr. Grimesdale thought that the failure of the reaction of cocaine proved it to be a paralysis of the sympathetic. Mr. Grimesdale also showed a case of congenital unilateral ptosis in which movements of the eyelids were associated with suction. Mr. Adams Frost showed a case of multiple ruptures of the choroid caused by a blow from the buckle of a belt. Some of the lesions seen were more like hæmorrhages than ruptures. Mr. Rockliffe had recently seen two similar cases due to a blow with a steel hawser. Mr. Fisher said that, if some of them were hæmorrhages, they were in the choroid, and that, therefore, a rupture of some part of the choroid must have taken place in order to produce them. Mr. Frost also showed a case of unusual retinal reflex. The fundus was unusually dark, and the patient's father had retinitis pigmentosa. Mr. Frost looked upon this case as physiological. Mr. Treacher Collins showed a case presenting unusual opacities in the central part of each cornea. The patient was a carman, aged 33, whose sight had been failing for two years. There had never been any real keratitis, but in the central part of each cornea were numerous white radiating lines of opacity; the periphery of the cornea was quite clear. Mr. Collins thought that these opacities were in the anterior layers of the substantia propria, and were due to infiltration and degeneration with small calcaerous deposits. Dr. Bronner thought they were very superficial, and might be scraped. Mr. Lawford had a somewhat similar case in a woman, aged 21, who had had recent ulcerative keratitis. This had given rise to a central corneal opacity without injection, but with great photophobia. He scraped the cornea, and this was now being examined bacteriologically. He suggested that this might be done in the present case. Mr. L. V. Cargill showed a case of corneal opacity after instrumental delivery. The case was a difficult brow presentation in which great force had been used with the forceps. The condition was clearing, and only a slight band of opacity now remained across the cornea. Mr. G. W. Thompson showed a case of obliteration of retinal artery following attacks of temporary amblyopia. The patient was a woman who for the last ten years had suffered from severe headaches, with temporary loss of vision. In September last she had an attack from which the vision had never properly recovered, the dullness she then noticed persisting to some extent. As a rule the vision returned after the attack had passed off. The disk was now partly atrophied. Mr. Lawford thought common temporary loss of vision was in association with migraine, and how seldom it was that ophthalmoscopic changes were seen in connection with it. Some of them might be caused by spasm of the vessels, which left the artery no less patent than it was before. He had recently had under his care a man, aged 35, who habitually overworked himself, and who after being much underfed during lent had developed dimness in the right eye which had persisted. For many years he had had temporary attacks of dimness, but now there was partial obliteration of one of the retinal arteries with hæmorrhages, and at other places were seen old changes, which apparently indicated lesser lesions of a similar nature in times gone by. Mr. A. H. Thompson asked if it were a case of endarteritis obliterans as he hardly thought spasm would last for so long a time. Dr. James Taylor thought that this case was similar to cases of temporary loss of function of some portion of the brain. This sometimes led to permanent changes. Dr. R. D. Batten discribed a somewhat similar case. Mr. Roll drew a parallel between this condition and Raynaud's disease. Mr. Fisher thought the tendency of opinion was that arterial degeneration was always present. This he did not consider was the case. Mr. Thompson, in reply, was inclined to the opinion that there was endarteritis present. Dr. Bronner showed some sections of a conjunctival lipoma in an infant. Mr. Rockliffe showed a case of very recurring glioma of the orbit. Mr. Lang showed a child whose orbit had been wounded with a pitchfork. The ophthalmoscope showed a white patch of exudation where the disk should be, and he thought that the optic nerve was torn across close behind the globe.

---

*British Medical Journal.

PAMPHLETS RECEIVED.

"Surgical Treatment of Adenoid Growths," by J. M. Kershaw, M.D.

"Treatment of Œdema or Dropsy of the Uvula," by J. M. Kershaw, M.D.

"Double Optic Neuritis Occurring During Lactation," by J. Green, Jr., M.D.

"Rapport sur les complications orbitaires et oculaires des sinusites," by F. de Lapersonne, M.D.

"The Indications for the Radical Mastoid Operation, with a Description of the Technique," by D. S. Ronner, M.D.

"Superheated Compressed Air in the Therapeutics of Chronic Catarrhal Otitis Media," by G. W. Hopkins, M.D.

"Ocular Affections Associated with Glycosuria, with Especial Reference to Central Amblyopia," by W. L. Pyle, M.D.

"The Use of the Ice Coil in the Abortive Treatment of Acute Inflammation of the Mastoid Process," by E. B. Dench, M D.

"Report of Eighty-six Successive Cataract Operations in the Philadelphia Hospital, with Remarks," by G. E. de Schweinitz, M.D.

"Transplantation of a Large Wolff Graft Forming a New Lining of the Orbit, and Permitting the Wearing of an Artificial Eye," by Ch. H. May, M.D.

ABSTRACTS FROM MEDICAL LITERATURE.

By W. A. SHOEMAKER, M.D.
ST. LOUIS, MO.

OCULAR AFFECTIONS ASSOCIATED WITH GLYCOSURIA WITH ESPECIAL REFERENCE TO CENTRAL AMBLYOPIA.

Walter L. Pyle (*American Medicine*, April 19) says: "According to Kleen, two-thirds of all diabetic patients suffer from some disturbance of vision, and occasionally the ocular symptoms are the first noticed, although generally they appear after the disease is well established. Bouchardot says that there is some visual disturbance in 20 per cent. of diabetic cases, commonly with no ophthalmoscopic signs. Hirschberg believes that the ocular changes are frequently overlooked, and that in very chronic cases retinal lesions are always present. Lagrange observed in the *Ophthalmic Clinic* of Bordeaux among 20,000 cases, 53 with diabetic affection. In 100 diabetic cases examined by Dr. W. O. Moore, there were 21 instances of ocular affection, distributed as follows:

Amblyopia without ophthalmoscopic change	**4**
Cataract	**4**
Retinitis (glycosuric)	**5**
Hemorrhage and floating bodies in the vitreous	**4**
Paralysis of accommodation	**3**
Iritis	**1**
	21

The means by which glycosuric disorders may affect the eye are as follows:

1. Abstraction of water from the ocular tissues, due to the increased density of the blood, as, for instance, in diabetic cataract.

2. The presence of sugar or its derivatives in the intraocular humors.

3. Lessened resistence of the ocular tissues, the result of general nutritional derangement.

4. The presence of a toxic substance in the blood, causing irritation, inflammation, and degeneration.

5. Through the cachexia incident to the disease, the blood-vessel walls are so affected as to allow transudation of the

corpuscular elements into the retinal tissues. Again, the smaller vessels, particularly the capilliaries, are very susceptible to the influences of toxic substance in the blood, and undergo certain degenerative changes that favor hæmorrhage. In the retina this causes localized degeneration on account of the absence of arterial anastomosis. Hæmorrhage into the sheath of the optic nerve may be a cause of the optic atrophy observed in diabetes.

The author concludes his article with the following summary:

1. Diabetes mellitus or other disturbance of the carbohydrate metabolism may affect any portion of the visual apparatus.

2. The ocular changes may be produced by chemic or physical means, or indirectly through the associate general debility.

3. The ocular affections may vary in intensity from a slight failure of accommodation to a formidable hæmorrhagic retinitis and total optic nerve atrophy. Minor visual disturbances are often made worse by fatigue or increased cardiac action, and may improve after prolonged rest or decrease of vascular tension.

4. The intraocular disturbances may be exclusively unilateral, and there is never seen ophthalmoscopically inflammation of the optic nerve—important differences from the changes in albuminuria, syphilis and other blood dyscrasias.

5. It is not uncommon to find albuminuria coexistent with glycosuria, and the retinal changes may present a mixed picture, or a typical albuminuric retinitis may be present in a patient with diabetes.

6. Central amblyopia may exist in glycosuria entirely independent of the toxic influence of alcohol and tobacco, or in patients addicted to the habitual use of these substances, this may be the prominent factor in causation. In these cases the initial lesion may be in the ganglion cells of the retina; the inflammation of the "papillomacular fibers" of the temporal half of the optic nerve being secondary to the retinal changes.

7. In chronic cases of glycosuria, with the exception of cataract, the ocular symptoms are often present when the constitutional and urinary symptoms are not marked.

8. The ocular symptoms may be the first to lead the patient to seek medical advice. Therefore glycosuria should be suspected in the following conditions:

(*a*) Premature presbyopia.

(*b*) Unexplained mydriasis or cycloplegia.

(*c*) Sudden change in the refraction; particularly marked development or increase of myopia past middle age, without cataractous changes.

(*d*) Intractable iritis.

(*e*) Cataract in young or middle-aged persons. An examination of the urine is advisable even in cases of senile cataract, as the etiology has a bearing on the prognosis of operation.

(*f*) Retinitis, particularly of the hæmorrhagic variety.

(*g*) Unexplained optic nerve atrophy.

(*h*) Sudden and marked amblyopia, particularly central, without visible fundus changes.

9. The prognostic significance of the ocular disturbances is not definitely established, on account of great differences in pathogenesis, severity, and ultimate issue of the numerous forms of glycosuria. Even in well-marked cases not only many forminable eye-lesions improve, but the patient's general health may be restored. Again the ocular symptoms may remain stationary and the general health improve, or a case of diabetes mellitus may proceed rapidly to a fatal termination without showing marked ocular disturbances. Hæmorrhagic retinitis and amaurosis preliminary to coma are the most serious symptoms. The ophthalmoscopic observation of greatest value in prognosis is the state of the retinal vessels, as this may be taken as an index of the patient's general vascular condition.

DIABETES AND THE EYE.

Busby Allen (*New York Medical Journal*, March 29) says that one of the early symptoms of diabetes involving the eye, is the loss of power of the ocular muscles, those supplied by the third nerve being the most frequently involved. These paralyses are usually partial and frequently disappear only to return again. They bear no constant relation to the severity of the disease. Paresis of accommodation is partial and usually appears early. If it occurs in a person under 35, and is progressing, it should lead to the suspicion of diabetes. A cataract occurring in young persons, ripening within a few weeks and involving both eyes, would almost certainly be diagnosed as diabetes, while in those of middle age the progress is slower and a diagnosis of diabetes cannot be made without an examination of the urine. The retinitis of Bright's disease at times resembles very closely that of diabetes and the two are often associated. In diabetes the optic disc is not usually affected but there is an an optic neuritis due to glycosuria. In operating for cataract in diabetes, a time should be selected when there is a lull in the disease. A simple ulcer of the cornea in diabetes may lead to a speedy loss of the eye.

PHLEGEMONE DER ORBITA IN IHRER BEZIEHUNG ZU DER FRAGE DER SYMPATHISCHEN OPHTHALMIE.

Albert B. Hale (*Medicinische Monatschrift, N. Y.* February) concludes, from the three cases which he reports, that the theory of transmigration of bacteria in the production of sympathetic ophthalmia will not account for all the facts, especially when there is a long interval between the injury of an eye and the infection of its fellow. The case of Schmidt Rimpler, published in the *Deutsche Med. Wochenschrift*, No. 27, 1900, in which an echinococcus of one eye was accompanied by a sympathetic ophthalmia of the other is still more difficult to explain by this theory. The author thinks that sympathetic ophthalmia is a neuritis which is not produced entirely by the migration of micro-organism, but that in any case where it has to do with the growth of bacteria it can be produced only by the irritation of tissues by the toxins thus produced.

THE MANAGEMENT OF CROSSED EYES IN CHILDREN.

Waller R. Parker (*The Physician and Surgeon*, January) emphasizes the importance of early treatment of strabismus; in children who are too young to wear glasses, he does not allow the use of books, pictures and toys that require close observation, substituting wagons, hobby-horses, balloons, etc., which do not tax the vision. If these measures do not prevent the development of squint, the author recommends a weak solution of atropine, used daily, to suspend the power of accommodation. The child is managed in this way until old enough to wear glasses, which are tolerated by many children as early as three years. A full correction of the refractive error should be given. If the constant wearing of glasses does not correct the squint, the good eye should be covered for an hour twice daily to enforce the use of the squinting eye. By this means the vision may be improved and the loss of co-ordination corrected.

The stereoscope can often be used to advantage in older children. The vast majority of cases, the author thinks, will not be cured by means other than surgical; and if at the sixth or seventh year the squint is constant after having constantly worn glasses, surgical procedures should be undertaken. Success requires the careful study of each individual case.

THE TREATMENT OF CONGENITAL LENS DISPLACEMENT.

L. D. Brose (*Ophthalmic Record*, March), from his experience, and reported cases, recommends the following treatment:

1. By trying to secure satisfactory vision by properly adjusted lenses.
2. Failing in this, he would determine, by the help of a mydriatic and a stenopetic disk, whether a small iridectomy will give satisfactory vision, and, if so, perform it.
3. When removal of the lens is necessary, he recommends discission in cases under 30, and extraction in those over 30 years of age, on account of the danger of secondary glaucoma after discission in the latter class of cases. The author instructs the patient from the beginning that this condition has a tendency to grow worse with time, and cautions him to report at once in case the eye becomes painful or vision worse.

UNRELIABILITY OF THE OPHTHALMOMETER AND THE SHADOW TEST.

Swan M. Burnett (*Ophthalmic Record*, January) says: "The human eye is not an optical instrument constructed on a fixed and uniform plan, even in the so-called normal optical condition. There are as many variations from a conventional standard, almost, as there are eyes. Small these differences may be in some instances, but still demonstrable even by our relatively coarse instruments in everyday use. Take any dozen individuals consecutively and examine them with the ophthalmometer of Javal, and no two persons will be found (and hardly the two eyes of the same person) whose corneal radii are exactly the same; and the refraction of the cornea will bear no constant relation to the refraction of the eye as a whole. It is now known, by our abundant experience, that the astigmatism of the cornea, as measured by that most ingenious instrument, gives us no uniformly trustworthy evidence as to the actual amount from which the eye suffers. It is these fundamental inconsistencies of construction, of which this is only one, that bar the way to a reliable application of any one of our objective instruments or methods for the determination of the refractive condition of the eye.

"For just the same reasons the shadow test, which obtains its results from the refraction of the eye as a whole, cannot be relied upon with certainty, notwithstanding the claim of some experts that they can determine the refraction within a quarter of a dioptre. In the general run of cases the movements of the shadow area are entirely misleading. This is especially manifest when the eye is under the influence of a mydriatic, the wide pupil opening up all the refractive irregularities the eye is possessed of. All of the well-known objective methods of examination give us most valuable aid, and each should be applied with all the accuracy possible. The court of last appeal, however must be the trial lense and the test types."

PAMPHLETS RECEIVED.

"Empyema of the Frontal Sinus. Some Obervations on Its Treatmemt," by G. L. Richards, M.D.

"An Unusual Case of Traumatic Rupture of the Membrana Tympani," by G. L. Richards, M.D.

"Beitrag zur Kentniss und Entwicklungeschichte der hinteren Irisschichten," etc., by M. A. Szili, Jr., M.D.

"Relapsing Traumatic Bullous Keratitis," by G. E. de Schweinitz, M.D.

BOOK REVIEWS.

THE OPTICIAN'S MANUAL. VOL. II. A TREATISE ON THE SCIENCE AND PRACTICE OF OPTICS. Compiled from the Serial Written by C. H. BROWN, M.D. [*The Keystone*. Philadelphia. 1902. Price, $2.00.]

This is a good and clear treatise on the errors of refraction and their correction.

Why the opticians should have a special manual on these subjects, which are to be found in dozens of good text-books, is an open question. There seems to be no particular need for it, in spite of the statement, made in the preface, that "there has been no treatise which could be truly described as covering completely the vast modern science of refractive optics."

THE DIAGNOSIS OF NERVOUS AND MENTAL DISEASES. By HOWELL T. PERSHING, M.Sc., M.D.. [Philadelphia: P. Blakiston's Son & Co. Price, $1.25.]

The manual before us is intended to facilitate the recognition of mental and nervous diseases by those who are not specialists in neurology. With such an aim, it has a particular field of usefulness of its own, and it seems to be well able to fulfill its mission. The text is clear and well written, and the book is of decided merit. ALT.

PAMPHLETS RECEIVED.

"A Series of Mastoid Operations," by Ch. H. May, M.D.

"Optic Neuritis in the Young. Report of Five Cases," by W. Cheatham, M.D.

"Histological Description of an Eyeball with Dropsical Degeneration of the Nuclei and Protoplasm of the Rod and Cone Visual Cells of the Retina which Clinically Simulate Glioma," by G. E. de Schweinitz, M.D., and E. A. Shumway, M.D.

"A New Ophthalmoscope," by Ch. H. May, M.D.

"Color Perception, Normal and Subnormal," by Ch. A. Oliver, M.D.

"Functional and Paralytic Strabismus," by D. B. St. J. Roosa, M.D.

"Enormous Naso-Pharyngeal Soft Fibroma," by C. R. Holmes, M.D.

"Two Cases of So-called Retinitis Proliferans, Both Bilateral," by G. C. Pardee, M.D.

"Hermann von Helmholtz, the Inventor of the Ophthalmoscope," by C. A. Wood, M.D.

"Amaurosis, and Its Treatment by the Subcutaneous Injection of Strychnia," by H. Derby, M.D.

"The Diagnostic Value of Ocular Changes in Tumor of the Cerebellum," by Ch. A. Oliver, M.D.

"The History of the Invention and of the Development of the Opthalmoscope," by H. Friedenwald, M.D.

"A Successful Case of Extensive Blepharoplasty for the Removal of an Epithelioma," by Ch. A. Oliver, M.D.

"An Experimental Study of the Effects of Change of Color upon Pigment Bacteria," by Ch. A. Oliver, M.D.

"Clinical History of a Case of Blindness from Congenital Deformity of the Occiput," by Ch. A. Oliver, M.D.

"Concerning the Treatment of the Apparently Unaffected or at Most but Slightly Involved Eye in Cases of Monolateral Glaucoma," by G. E. de Schweinitz, M.D.

ERRATUM.—On page 160 (May number) lines 12 and 14 from below read iodine instead of codeine.

THE AMERICAN JOURNAL
OF
OPHTHALMOLOGY.

VOL. XIX. JULY, 1902. No. 7.

ORIGINAL ARTICLES.

REFRACTION, ITS DIFFICULTIES AND HOW TO OVERCOME THEM.*

By C. L MINOR. M.D.,
SPRINGFIELD, OHIO.

I DO not hope to bring out in this paper any new method of refraction or present to you any new ideas along this line, but to recall to your minds some methods forgotten or discarded, with a plea for their use *aided* by the newer mechanical devices if the examiner sees fit to employ them.

No one is more ready than I to take advantage of any aids in the advancement of our profession, but I firmly believe that we should give them a fair trial before adopting, and if found wanting, to await their further development. I refer here especially to the ophthalmometer, as you know, a device for measuring astigmatism, and the refractometer, an instrument for measuring any refractive error.

I shall first take up the "Difficulties of Refraction," from which I think that you will see that the second phrase of the subject under consideration, "How to Overcome Them," will deductively follow.

I take the difficulties of refraction to include not only the mere testing for the error, but every condition that bears upon the result of the correcting, *i. e.*, testing the muscular balance; the prescribing of lenses and the fitting of the frames.

---

*Read at the meeting of the Western Ophthalmologic and Oto-Laryngologic Association, held at Chicago, April 10, 11 and 12, 1902.

I believe one of the chief reasons for not obtaining better uniform results is that we are too hasty in arriving at a conclusion. For instance, if a patient comes to many of us with asthenopic symptoms, and after a test of a minute or two we find he has $^{20}/_{20}$ vision, reads Snellen number 1 perfectly, and muscles normally balanced, we are too likely to tell him that it is not his eyes that are causing his symptoms, but some other part of his anatomy. Again, in order to gain time, some are wont to be satisfied with the first lens that gives his patient $^{20}/_{20}$ vision, when by changing the axis five or ten degrees, or by increasing the strength one-fourth or even one-eighth dioptre, the print will be more clear-cut. It is very often these very slight differences in degree, which seem trifling, that gives the nervous patient, or the one that uses his eyes for near-by constantly, the result that some one else has failed to obtain.

Some of the troubles that confront us as regards patients are, how to refract. First, children too young to read or to reason with; second, imbeciles; third, insane; fourth, patients with nystagmus; fifth, patients after cataract extraction, or any patient whose intelligence is below par, and bedridden patients.

A few of the difficulties as to methods are: First, we place too much reliance on one test or one form of testing. Especially is this true of the ophthalmometer, optometer, refractometer, or any mechanical device for correcting errors of refraction.

Second, we neglect entirely or rely upon one test for our investigation of the muscles.

Third, we pay too little attention to the fitting of the frames.

I believe I can make myself better understood, and not miss any detail, by relating briefly the various steps that I pursue in cases of refraction. I make it a rule that every patient who comes into the office complaining of symptoms that require refraction is subjected to a homatropine test, unless contraindicated by disease, even if it is no more than prebyopia, even in very advanced age.

I first make careful record of the patient's business, age, symptoms, general health, especially as regards his digestive apparatus, his vision for far and near, the latter including far and near point, and his muscle balance. After instilling a drop of 2 per cent. of hydrobromate of homatropine every five minutes for eight times, I am ready for refraction. I first make a careful ophthalmoscopic examination of the fundus and a record of the same. Next a shadow test, using a concave mirror (whether a plain mirror or concave lies with the oculist, the same results being obtained by either), which tells me the following: First, whether there is myopia or hypermetropia; second, whether there is defect requiring a plain spherical, a plain cylindrical or spherocylindrical or cross-cylinder lens; third, the axis of the astigmatism if present, and fourth, one is enabled to estimate the *amount* of the error within 0.50 dioptres if he has used the test faithfully.

What a wonderful advantage over the optometer, which is not accurate and cannot be relied upon at all, since in the first place it measures only the corneal astigmatism and varies in that from 0.25 to 0.50 dioptres in strength, and from 5 to 15 degrees in axis, does not measure plain spherical defects, in mixed astigmatism cannot know which is the plus or minus defect, cannot be used in class of cases above mentioned, *i. e.*, children, imbeciles, nystagmus, insane, etc. At best it is only an aid, and only a very poor aid at that, on account of its unreliability. In my judgment, as soon as a test varies, just so soon it is well to discard that for one that you can trust.

After the shadow test in ordinary cases I use my trial frame and lenses. It is just at this point that we have success or failure in our result, according to whether we are careful or careless. If I can get $^{20}/_{20}$ vision without difficulty I alternate back and forth with one-fourth or one-eighth dioptre lens, adding to and subtracting from, shifting my axis one or two degrees in order to find lenses or axis that will make the letters appear more clear-cut, although they may see $^{20}/_{20}$ with any of them. If the patient is in doubt as to which one of the two or three lenses is the clearest, I come back to the shadow test and let that decide for the patient.

If, again, you have almost $^{20}/_{20}$ vision and there does not seem to be any lens which will give a better result, the shadow test will come to your aid again and show you that what result you have is the best that can be obtained, or will show you what change to make. After having finished the refraction with the lenses I invariably make a shadow test, and if shadow is not neutralized I put in the lens that will neutralize, and if the patient will accept that I enter that correction in my book instead of the one first found.

Let me put in a word of caution at this point: If the patient does not accept your shadow correction do not rely on it, for it is not infallible, and is only an aid to your work and bears out the statement that I formerly made, that one must not rely on any one test.

The real value of the shadow test is found in those cases in which you must rely upon objective tests alone. You can neutralize the shadow in a few minutes, even if you only get a "snap-shot" view of the fundus as the patient rolls his eyes around. This is the only method that I know of that will give you any more than an approximate result. It is true that the old method of direct ophthalmoscopy will give you some kind of a result, but I have been unable to arrive at any accurate result, for it is impossible with the patient's eye moving in all directions, for me to relax my accommodation for the length of time necessary to focus the optic nerve.

I would not decry the use of the ophthalmometer as an aid for those who are very expert in its use, but I do think it exceedingly bad practice to rely on its results alone, for it varies so much in its results. Neither would I rely upon the shadow tests alone, but the latter in my mind is just as good and a little better, and requires one-tenth of the time. But what in my mind is the test par excellence, is the trial frame homatropine test with the shadow for aid to more rapid work. The homatropine putting the ciliary muscle at rest relieves all spasm of that muscle, and gives us a perfectly quiescent eye in which to focus the rays of light with the lenses. It is only with such an eye, with all possible strain or accommodative function removed, that you can adjust the proper correcting lenses.

After correcting the error I then make a test of the muscles with the full correction on, first testing the internal with the prisms, beginning with the lowest and alternately test each eye until the patient is no longer able to obtain single vision by whatever concentration he tries. I then try the external recti in the same manner, and then the upper and lower muscles. After all this testing I use the Graefe candle test without red glass, and if there is the slightest insufficiency it will become apparent after the fatigue caused by the former test. It is needless to remark that a careful record of these tests is made for permanent keeping.

After three days or more, for the effect of the homatropine to wear away have elapsed, I check up my original results. I place in the trial frame the full correction and then add to this minus sphericals until the vision of the patient is equal to the vision under homatropine. This, of course, gives me the amount in dioptres of the strain upon the eyes. I next make the muscle test with this correction on, and if this test corresponds in ratio, not in actual prism degree, with the test without correction and the test under homatropine, I pay no further attention to the muscular balance. I now test the near-by vision with full correction on, and if patient is a presbyope I add on plus sphericals according to age.

If patient is one for whom I had to rely upon my shadow test, I take into consideration his age, and making allowance for that, put such correction on and notice by expression of countenance or by acts whether there is any apparent change with lenses on, and if any intelligence is shown at all I add to or subtract from these lenses and note change, but rely principally upon my original examination for calculation as to lenses that should be prescribed.

It is in the prescribing of lenses after you have made your refraction that brings you success or failure. You must decide first whether glasses are for constant use or for near, and how do we decide that? If our patient is a myope he, of course, wants glasses that will enable him to see clearly at a distance. In these cases I always order full correction to be worn constantly if my patient's age is 35 or under, for I believe in exercising the ciliary muscle since nature provided us with one to be used, and not allow it to atrophy from non-use, which it will surely do. I say full correction to age of 35, for I believe that presbyopia begins earlier in myopes. I will also qualify the above statement by saying that the above applies to near-sightedness of four dioptres or less.

In hypermetropes I decide upon constant use or otherwise by taking into account first, whether the patient suffers from headache due to eye strain; if so, I usually order lenses for constant use; second, the business of my patient. If he has an occupation which requires almost constant application of his eyes near-by, such as bookkeeper, stenographer, etc., I then order full correction for near use, since there is a constant strain on the ciliary muscle all day long, and by relieving that you usually relieve all the symptoms that patient complains of. If the error is so great that after a fair trial he is not relieved, you can then order a separate pair for distance. The age must be taken into consideration in ordering lenses for constant use.

I have been asked frequently, at how early an age do you prescribe lenses? The youngest patient I have prescribed glasses for has been four years, but I should not hesitate to prescribe them at an earlier age if occasion demanded, and by that I mean if I had a case of cross-eye due to the absence of a focus in one eye. Until the age of 14 or 15, I find the nearest to the full correction that you can prescribe is about one-half, and proportionately on until about the 35th year, when full correction can usually be worn with a little difficulty.

In deducting from the full correction for constant use, I place the full correction in the trial frames and then add just enough minus spherical to have the patient read as well as when under homatropine, and then prescribe lenses from 0.50 to 1.0 dioptres stronger. If the full correction is cylindrical, I order full correction cylinder with a minus spherical added to compromise with the ciliary muscle, and do not lessen the cylindrical correction instead, as so many oculists do. I believe you get the best results from correcting all of the astigmatism.

If patients object to wearing lenses all the time, and positively refuse, I compromise on lenses for near use, warning them that they must not expect to get complete relief from such a course.

I often find school children and college students in whom slight defects cause grave symptoms. I order for such ones full correction, to be worn at study during school days, but to be laid aside at all other times. A careless optician will spoil many an oculist's good work by not centering his lenses; by not taking into consideration whether lenses are for near use or constant—*i. e.*, by not placing glasses at proper angle; by making patient uncomfortable on account of pressure from nose piece, or have temples too tight; by using too small lenses, so that the patient looks under, over or around except when looking straight ahead. I tell my patients that it is just as important to have the frames fit the face properly and the lenses to rest properly before the eyes as it is to get the proper glass for the eyes. I always request my patients to bring their glasses to me before wearing them, so that I may see if the frames fit and the lenses are according to the order, and then I am responsible if they do not give results. I have every one of my patients wear spectacle frames if possible, and I discourage the use of bifocals. I always transpose my cross cylinders to spherocylinders, so that the patient will have as large a field as possible. The new Toric lenses will obviate that necessity in the future. In regard to the Torics, they are very much of an improvement over the old style in spherocylinders, and will prove of especial advantage with patients with long lashes or prominent eyes. Do not, however, prescribe Toric lenses in eyeglass frames, for it is practically impossible to center them accurately, and if this is not so they do more harm than the increased field can do good.

I have talked at length on the uncomplicated cases of refraction, *i. e.*, those that do not contraindicate the use of homotropine.

Those cases of glaucoma, adhesion of iris from former iritis, macula corneæ, deposits on lens, beginning cataracts, any disease causing turbidity of aqueous or vitreous, choroiditis, etc., that need refracting, I believe the neutralizing of the shadow by retinoscopy to be not only the most rapid but most accurate.

What shall we say of anisometropia? Dr. Alexander Duane, of New York, in a recent article, concludes that it is best to *try* to correct all cases of anisometropia, and if patient cannot wear correction, then ignore one eye. He ascribes four reasons for failure.

1. One image being indistinct and blurred confuses the vision of the good eye.

2. Glasses correcting defect are too strong. This can be overcome if patient persists in wearing glasses.

3. The prismatic effect of glass, strong enough to correct defect when patient looks anywhere but through center.

4. Muscular deviation cause of patient's inability to use glasses.

I always correct anisometropia according to rules mentioned in the preceding pages. If there is a deviation of one eye or vision is not normal, I have the eye with good vision tied up and require my patient to use the other eye with the correction on for an hour at a time, three or four times a day, if he is under 25 years of age. In children an eye that deviates as much as 30 degrees from non-use can be brought to binocular vision by such a procedure. Vision as low as $^{20}/_{100}$ can be brought to normal by careful, persistent training and changing of lenses nearer to the full correction, as the eye will allow.

Persons in middle life can wear anisometropic correction with ease if vision is normal or nearly so in each eye.

After cataract extraction I do not attempt to refract the operated eye if vision in the other eye is normal or nearly so, for I have never seen a patient yet that could wear correction in which the difference in refraction is so great. I believe this to be due to the fact that the images are of different size, despite the fact that so many are against me. I believe that the images are mathematically different on account of the greater refraction of the rays of light in one than the other, but when the images are projected with a prism the images are the same.

The cases of anisometropia that bother me the most are those of myopia in one and hypermetropia in the other eye. I prescribe usually the full correction myopia and as near as possible hypermetropia with varying degrees of success.

To recapitulate:

1. Use homatropine at all ages, except in aged, unless positively contraindicated by disease.

2. Use shadow test as an aid rather than optometer, on account of its greater speed and better accuracy, but do not

rely upon it unless absolutely necessary, using trial frames and lenses as a final test.

3. Test muscles at least three times, and if proportions are relatively the same that will suffice.

4. Be careful that you take into consideration the temperament, physical condition, age and occupation in prescribing lenses.

5. Always review a pair of glasses after the patient gets them from the optician.

6. If necessary to rely upon one test without the assistance of the patient, the shadow test is the quickest and most accurate test with or without homatropine.

TRANSIENT ASTIGMATISM.*

By O. A. GRIFFIN, M.D.,

ANN ARBOR, MICH

INTRODUCTORY to the presentation of this subject, it may not be amiss to refer briefly to the point of normality and frequency of the astigmatic condition, as with some there seems to be a definite relationship between these phases of the subject and its transiency. If we refer to the ophthalmological literature of a few decades past and compare with the views entertained at present, a finer distinction between normality and ametropia will be noted coincident with the increasing strain and pressure of succeeding years and the improved methods of examination.

In the classical essay of Donders,[1] the statement is made that "astigmatism less than 0.75 D. may be considered as normal, astigmatism greater than 0.75 is abnormal, because vision in this condition is generally lowered and the use of cylindrical lenses is often of service." If we consult a more recent author[2] on this subject, the following comment will be found: "Exactly what degree of astigmatism should be considered abnormal has not been agreed upon by observers. Some look upon 0.25 D. as abnormal, while others think 0.50 D. normal. It is impossible to formulate any law of universal application for such a varying and imperfect optical instrument as the eye. * * * We feel justified in considering only those degrees of astigmatism abnormal which exceed 0.25 D. We would, however, not deny the possibility of certain rare cases deriving benefit from the employment of glasses of this lower power.''

---

*Read at the meeting of the Western Ophthalmologic and Oto-Laryngologic Association, held in Chicago, April 10, 11 and 12, 1902.

While the above may hold true for patients in general, it does not, in my experience, obtain among those who are compelled to follow prolonged near work. In my clientage, which is drawn largely from the various departments of the University of Michigan, where the extended courses of study tax to the utmost the endurance of many a student, fully one-third of my refraction cases show an error of but 0.25 D. of astigmatism, simple or combined, which I have corrected with none but the happiest of results. Indeed, numbered among this list are many who have been rendered neurasthenic by the presence of even this small amount of ametropia and have regained their health only upon its correction. While I have found it necessary to correct smaller errors of astigmatism in only a few instances, in correspondence with several ophthalmologists of national reputation upon this matter, I find that many agree upon 0.25 D. of astigmatism as being abnormal; and one in particular offers the following comment: ''It often happens that 0.12 D. of astigmatism is of no importance and need not be considered, but in a very considerable number of cases the patient will not be fully benefitted unless this small degree is corrected.'' It will suffice to say, in conclusion, upon the point of normality, that before harmony of result is obtained the visual, motor and sensory parts must be relieved of all unnecessary strain and irritation; and to accomplish this, the individuality of each case must command our attention; for there is an art in refractive work as well as a scientific aspect.

Illustrative of this advancement that has been made in recent years in the recognition and correction of ametropias, I cannot offer a more fitting preface to my brief consideration of the frequency of the astigmatic condition than the words of Dr. Julian Chisholm:[3] ''I often wonder what has become of the host of hyperopic eyes that I formerly saw and treated with spherical convex lenses. That I see the same character of eyes now I am quite sure, but no longer from the same standpoint. A more careful examination proves these cases to have been mild grades of astigmatism, often myopic. The same class still comes to me from other specialists, who are holding the views that I formerly acted upon before I found out my mistake." That there are some to whom experience has not yet revealed these facts is almost daily demonstrated in my practice, where I find that many patients are wearing glasses for the correction of an hyperopia when, in fact, both subjective and objective tests show a simple or compound hyperopic astigmatism; and, if the latter variety has been recognized, the lenses prescribed are usually too strong in their spherical power, with a corresponding deficiency in the cylindrical refraction. This inaccuracy of result is due in many instances to an improper mode of procedure, which I regret to say finds recognition in a few works on refraction. The examiner is directed thusly: "With the accommodation suspended by a cycloplegiac, spheres are employed so long as vision is improved, and if normality of sight is not attained thereby, the determination of astigmatism is indicated." Unmindful of the fact that a sphere will improve vision in astigmatism up to about one-half of the measure of the error (although this fact is often stated conversely in works on refraction), it is not surprising then that the devotees of this method, unaided by objective tests, should entertain a belief in the correction of an "induced transient astigmatism" to explain the frequency of our astigmatic findings, which statement I have frequently heard. While an examination into the history of my private cases shows that 89 per cent. of this number are astigmatic, I am confident that this percentage is in keeping with thorough, conscientious refractive work, as it finds corroboration in the experience of several eminent ophthalmologists with whom I have corresponded regarding the subject. From a paper devoted to the "Study of the Refraction of Seventeen Hundred Eyes," by Ellis,[4] I take the liberty of quoting the following statements: "Of the 1,700 eyes whose refraction was measured, 1,434 (85 per cent.) were astigmatic." "In 72 per cent. of all the astigmatic eyes the error was less than 0.75 D." Four hundred and ninety-four of the eyes had only 0.25 D. of astigmatism, and yet I found it both wise and expedient to correct the greater number of these small errors.'' In his excellent treatise on School Hygiene, Risley[5] tells us that out of 2,628 cases. 90 per cent. were astigmatic.

Not deeming it necessary to dwell longer upon the frequency of the astigmatic condition, believing that a discussion of the subject will bring forth many interesting facts, a résumé of the literature at hand upon the subject of transient astigmatism may not prove uninteresting. Under the caption of ''Physiological Astigmatisn,'' Thorington[6] presents the following facts: ''This is due to lid pressure, or temporarily to extreme pulling or contraction of the extraocular muscles. It is a voluntary astigmatism, and therefore not constant. It is not a condition of all eyes. The writer has demonstrated with the retinoscope and the ophthalmometer that the condition can be produced in eyes not otherwise astigmatic. Drawing the lids together in the act of squinting or frowning, the patient can press the cornea from above or below and give the horizontal meridian of the cornea a longer radius of curvature and the vertical meridian a shorter radius, or with the eye looking into the telescope of the ophthalmometer, no overlapping of the mires is noted, but in some instances when told to open the eyes widely and 'stare' into the instrument, as much as ½ to ¾ a diopter of astigmatism may be recorded.''

''It is not rare,'' says the late Dr. Noyes,[7] ''to discover, as Laquer pointed out, that the curve of the cornea is not constant. It sometimes changes as we look at it, because the images approach or separate instead of remaining still. They exhibit these oscillations under the action of the lids, and also if the upper lid is lifted off the globe, under the action of the motor muscles. Drawing on the lids at the outer angle will increase the corneal curvatures greatly, hence we have an explanation of the uncertain findings in some cases of astigmatism apart from spasm of accommodation.''

In his excellent work on ophthalmometry, Davis[8] offers the following: ''In a few cases the recti muscles can by voluntary action alter the corneal astigmatism. I have reported one such case in the *Manhattan Eye and Ear Hospital Reports*, January, 1895, where the patient had a corneal astigmatism with the rule of 0.50 D. which he could, by voluntary action of the recti muscles, increase to 2 D. in the right eye and to 1.50 D. in the left eye. When under a mydriatic he could still increase the astigmatism in the right eye to 1.50 D. and in the left eye to 1 D. The lids were held from the eye so they could have no influence.''

Lautenbach[9] in a paper "On the Local and General Conditions that Change Corneal Curvatures,'' makes mention of the action of the ocular muscles, lid pressure, segmentary contraction of the ciliary muscle, in conjunction with certain dyscrasias in their weakening effects upon the substance of the cornea, as productive of temporary alterations in the curvatures of the cornea, and also makes evident that many heterophorias are due to an effort on the part of the extraocular muscles to ameliorate the astigmatic condition present.

Aside from the statement of Davis, we are led to infer from the above that transient modification of the corneal curvatures is of common occurrence, and would accordingly complicate our refractive work markedly. That many cases in which a wavering of the mires is noticed are not instances of a transient astigmatism is attested by De Schweinitz[10] in the following comment: "Nothing is more common than to see the mires separate and overlap again, so that the apparent curvatures of the cornea seem to change while under observation. This change is due to slight movements of the eye which bring different portions of the cornea into view. It is difficult for most patients to remain long in the required position before the instrument, and hence the reading should be rapid as well as accurate.''

Although the varying positions of the mires have commonly been observed in my use of the ophthalmometer, the indicated transient astigmatism has found but rare corroboration in the employment of the retinoscope and the subjective tests. Thus the thought occurred to me that aside from the instances which De Schweinitz cites, possibly this apposition and recession of the images might obtain its origin, in many cases, in the eye of the observer. A thorough investigation into the possibilities of the action of the accommodation upon the position of the mires revealed the truth of my supposition. Oscillations of the targets may be observed when an artificial cornea is employed, providing the accommodation is active.

For instance, the mires are placed in apposition with the eye focused sharply at the point of contact. If the eye is now adjusted for infinity; or, in other words, the accommodation is suspended, the mires separate and remain in this position with relaxation of the eye, but on fixing the mires they return to contact. With the use of a greater amount of accommodation, the images overlap. As a further demonstration of the effects of the adjustment of the eye upon the movement of the mires, the following experiment was performed by the aid of fifteen patients, mostly medical students, whose training would fit them for the test. Their eyes, as viewed through the ophthalmometer, showed in each instance an apparent variability in the amount of astigmatism. They were then instructed to examine both my eye and the artificial cornea when a similar wavering was recorded. Preparatory to a refraction of their eyes a cycloplegiac was employed, and when the accommodation was thoroughly suspended the patient again viewed my eye and the artificial cornea when no oscillation of the mires was noted, except in one instance. In order to substantiate these findings, both my associate and myself passed through the ordeal of mydriasis with a corroboration of the facts recorded above. Had there existed the transient astigmatism which each of us apparently possessed, a recession and apposition of the images would have obtained even under the action of the cycloplegiac, unless it were due to a segmentary action of the ciliary muscle, which condition is probably rare.

From these experiments it is evident that in order to secure accurate readings in ophthalmometry a certain degree of skill and familiarity with the limitations of the instrument is imperative to keep the eye nicely adjusted at the point of contact of the mires. A correction of the examiner's ametropia, especially of the astigmatic variety, should receive attention, as it is difficult to control the accommodation under these conditions. Another point should be made evident to the student: Care should be exercised to hold the head perfectly steady during the examination, as a movement of the head will produce an apparent transient astigmatism by directing the vision through the periphery of the eye-piece, with its resulting prismatic displacement of one or both of the images.

A fact which I wish to make prominent is that, in my experience, with rare exceptions, an oscillation of the mires can be traced, either to a movement of the eye of the patient during examination, thus presenting different portions of the cornea to view, or to an accommodative effort on the part of the observer. I would, however, not have it understood that action of the lids and the extra-ocular muscles may not produce a transient modification in the curvatures of the cornea; for a few instances have come under my observation illustrative of this condition; but among the 1,200 cases which I examined only two patients exhibited enough transient astigmatism to complicate their refraction. In each instance there was a spasmodic variability in the visual acuity, ever under the action of a cyclopediac, 1.00 D. of transient astigmatism being recorded in one case by the ophthalmometer and substantiated by subjective tests. This instance was unilateral, and produced by spasmodic action of the lateral recti muscles.

In conclusion, I wish to make mention of the following phenomenon, which I have heard discussed as an evidence of the existence of a transient astigmatism. It is occasionally observed that after an ametropia is corrected the patient will state, while looking at the astigmatic chart, that the line upon which the attention is fixed becomes more distinct than the rest of the radiating lines. This may occur with or without a cycloplegiac, and is due to the presence of small degrees of over or undercorrected astigmatism, together with an active accommodation. Many such cases have come under my observation, but are always regarded as an evidence of an incomplete suspension of the accommodation, which is fully demonstrated by further instillations of the cyclopegiac. In my opinion, to prove the existence of a transient astigmatisms it requires not only the apposition and recession of the mires, but a variability of the visual acuity with the accommodation thoroughly suspended, corroborated by the findings of retinoscopy.

As a closing word, I wish to say that I am an ardent supporter of ophthalmometry, as it presents many facts of practical and scientific interest which other means of examination fail to make evident, but unless we understand thoroughly the limitations of the method and possess the necessary faculty of accommodative control, the findings of ophthalmometry will confuse rather than aid us in refractive work.

BIBLIOGRAPHY.

[1]The Nature and the Consequences of Anamolies of Refraction.
[2]Burnett—Treatise on Astigmatism. 1887. p. 48.
[3]Trans. Oph. Sec. Am. Med. Assn., 1891.
[4]Jour. Am. Med. Assn., 1895.
[5]System of Diseases of the Eye: Norris and Oliver, Vol. II., p. 371.
[6]Thorington—Refraction and How to Refract, 2d ed., p 122
[7]Noyes—Diseases of the Eye, p. 123.
[8]Davis—Refraction of the Eye, p. 358.
[9]Jour. Am. Med, Assn., 1895.
[10]De Schweinitz—Diseases of the Eye, 3d ed., p 667.

DISCUSSION.

DR. SUKER, Chicago.—I cannot believe and would rather not believe some of the experiments that Dr. Lautenbach, of Philadelphia, has undertaken to prove, that the extra-ocular muscles by contraction or relaxation produce astigmatism. Nor can I believe that any constant extra-ocular pressure will produce astigmatism without injuring the integrity of the cornea. This, for the simple reason that the cornea is so constructed physiologically as to successfully combat any pressure that might result either from the lids or from the extra-ocular muscles. Certainly if any amount of astigmatism is produced it must be exceedingly small, and I should sincerely doubt an astigmatism of one diopter had ever been so produced, for this would mean a change in the length of the corneal radii equivalent at least to 1 mm. This change, then, would mechanically destroy the transparency of the cornea as the result of infiltration due to this excessive change in the curvature. This rough sketch (draws on blackboard) will demonstrate that the fibres of the cornea do not only run parallel, but diagonally, and at right angles, and are thus able to cope with any pressure that might be exerted upon them. You can demonstrate astigmatism in any eye, whether under a cyclopegic or not, for the simple reason that the cornea is not a section of a perfect sphere. The ophthalmometer is not a reliable instrument, though it is a good guide. It fails to demonstrate or bring forth any lenticular astigmatism, though the majority of the cases are corneal. Yet we know that a small percentage are lenticular, another portion are cornea-lenticular. In these latter two classes the ophthalmometer will always fail to demonstrate even the slightest amount of astigmatism. Hence if it fails in a certain percentage of cases, it cannot be claimed to be a reliable instrument for all cases that come under the head of astigmatism in general.

Dr. Vail, Cincinnati.—This subject has always been more or less of a bugbear to ophthalmologists. The subject of refraction is one of which much has been written and many diagrams have been published in the books. When we are students, and before we ripen into mature doctors, we are inclined to turn the pages of the book to begin at the first page on the subject of optics and start in as if we were going to digest the whole thing. We go through a page and we find on the next an illustration of the rays of light passing through a prism, and we are told they are refracted towards its base, and we read of the parallel lines, and we turn again a page and we find angle A, B, C and D, and we find divergence, and we turn a page and find a picture, and we forget what it was about, and we slam the book shut and take up a trial case. This is more satisfactory and the patient helps you by telling you: this is better and that is worse. We have been through the study of physiological optics, and we understand more of it than the fresh student who takes it up in connection with medical work. So we study the transposition of lenses, and what is the effect of laying a spherical lens in front of a cylindrical lens. Then there is the shadow test. This test, employed in the proper way, is of wonderful service. I used the ophthalmometer for six months. It is only a convenience. The ophthalmoscope is the best thing. That is the instrument I work with together with the shadow test. This may be a very dry subject, but if well understood and appreciated it, is an exceedingly wet one. We have to work at it faithfully to understand it, but when fully appreciated it is just as interesting as operative ophthalmology.

Dr. Bradfield, La Crosse, Wis.—About five years ago I was consulted by a young girl with severe reflex headache. The family physician had exhausted all the remedies without effect. She was 14 years of age. I examined the eyes carefully, and found no error of refraction. Vision about $^{20}/_{30}$. The ophthalmometer showed no astigmatism. Retinoscope showed refraction about normal. I tested her refraction under homatropin, being satisfied there was no trouble; and again in two weeks, with the same result. I advised rest, and the headaches became less severe. In less than a year, her father having failed in business, it was necessary for her to go to work. I again examined the eyes, and found one diopeter of astigmatism according to rule. Glasses gave her perfect satisfaction, and the headaches disappeared. One year later she came, and said she had the same headaches. The ophthalmometer showed two diopters of astigmatism. I found that the two diopters gave her again perfect vision for two years. Then, when she again had some headache, I found three diopters in the right and three and one-half in the left. I examined her with a cyclopegic, and afterwards with the ophthalmometer and by the retinoscope, and these are the changes that have taken place in her eyes.

DR. MINER, Springfied, O.—I have nothing to say about my own paper, but would like to say about Dr. Griffin's paper that I do not believe in physiological astigmatism. You may force upon a patient an astigmatic lens if he is ametropic, and he may still have V. $^{20}/_{20}$, but it depends upon the occupation whether an astigmatism of one-half or one-fourth diopter gives trouble. A person with an out-door life will not be troubled with one-half at all. If this person goes to a city and attempts to study or occupy his time with reading or writing, as a book-keeper, a student, etc., then his one-half diopter will no doubt give him a good deal of trouble. As to the ophthalmometer, I do not use it, for the reason that it is not reliable. I use the shadow test, and find it tells me just as much as the ophthalmometer. It takes less time, and is more accurate; but I do not rely upon the shadow test entirely.

DR. GRIFFIN (closing discussion).—In reference to Dr. Suker's point, I do not think our ideas are so far apart as he thinks. I believe that the ophthalmometer is simply indicative. That is all I claim for it. I do not claim we ought to prescribe lenses according to what we find by the ophthalmometer. It simply indicates what the curvature of the front of the cornea is, from which we may draw certain conclusions. It simply gives us the corneal curvature and the axis of its astigmatism. I, too, use the shadow test, and I agree with everything Dr. Vail has said. As Dr. Jackson has pointed out in his work on diseases of the eye, when speaking of trial lenses, we should secure all the evidence by all methods at our hand.

RESECTION OF THE CERVICAL SYMPATHETIC GANGLION—ITS PRESENT STATUS.

Wilbur B. Marple (*Medical Record*, May 10) from a study of eighty-six reported cases, draws the following conclusions:

1. That the operation of extirpation of the sympathetic ganglion is a safe procedure in the hands of a skillful surgeon.

2. That (as Ziehe says), while the material is not yet sufficient to reach a positive conclusion as to the permanence of its effect, it is nevertheless established that some of the glaucomatous cases have been improved for some months by resection; in others the condition apparently remains stationary. The results have varied, and one cannot yet be sure in what cases it can be advantageously employed. It at least, apparently, does no harm. A considerable number of favorable results have been reported in chronic irritation or inflammatory glaucoma, as well as in simple glaucoma, in which, oftentimes, pain is abolished.

3. It does not replace iridectomy, but may possibly supplement the latter, in case it is refused or has already resulted disastrously in the other eye, or is contraindicated, as in hæmorrhagic glaucoma, dacryocystitis, etc.

4. Until our cases are observed more carefully and for a longer period of time, it will be impossible to arrive at positive conclusions as to the indications for the operation or as to its permanent results.

MEDICAL SOCIETIES.

FIFTY-THIRD MEETING OF THE AMERICAN MEDICAL ASSOCIATION.*

Held at Saratoga Springs, N. Y., June 10 to 13, 1902.

SECTION ON OPHTHALMOLOGY.

FIRST SESSION.

ADDRESS OF THE CHAIRMAN.

FRANK ALLPORT (Chicago) said that he thought it was quite unnecessary to assure his colleagues how much he appreciated the honor of being permitted to preside at the meetings of this section, which he considered the representative association of ophthalmologists in this country, and the chairmanship of which he regarded as the highest gift of American ophthalmologists, because no taint of political manipulation had ever sullied its reputation. In the program of the present meeting the endeavor was to have a few subjects systematically and thoroughly treated rather than to treat a great variety of topics. The officers were much gratified at being able to announce that owing to an invitation extended to Professor Haab, of Zurich, Switzerland, he had traveled from that distant country expressly to deliver an address before his American colleagues in this section, and in behalf of the section he bade the Professor welcome and extended to him the privileges of the floor.

THE TREATMENT OF SERPIGINOUS ULCER OF THE CORNEA.

CHARLES J. KIPP (Newark, N. J.) said that twenty years had now passed since he first observed that certain cases of serpiginous ulcer of the cornea in which no further progress was noticed after they came into his hands, presented the following features and healed under very simple treatment: From the margin of the ulcer straight lines diverge in all directions through the parenchyma of the deepest layer, not giving off branches, and the further ends of which lines are connected by grayish intermediate striæ; if present all around, these intermediate lines form a distinct ring, and if the ulcer is situated in the center of the cornea with these striæ well developed, the appearance might be compared to a spider's web. He considered that ulcers presenting this appearance had ceased to be progressive and that no treatment involving further destruction of tissue should be used. When blenorrhea of the sac is present he splits the canaliculus. The only treatment required is warm fomentations and instillation of a mydriatic. When these linear opacities are not present he uses the galvanocautery and iodoform powder; if there is much pain, abstraction of blood from the temple; flourescin is used to determine the extent of the ulcer before using the cautery; if tension is high he perforates the floor and sometimes does paracentesis of the corneal margin, but prefers perforation with the cautery. The writer spoke of the hope held out by Dr. Roemar that we shall soon possess a serum which will arrest the progress of the pneumococcic ulcer when injected subcutaneously or applied locally.

---

*American Medicine.

Discussion.—DE SCHWEINITZ (Philadelphia) said it was unfortunate that the name serpiginous ulcer was used, as it gave a wrong idea of the disease; it was his practice to make his treatment agree with the bacteriologic conditions; in the absence of virulent infection he curetted and used bichlorid; in virulent infection he used the actual cautery, tincture of iodin, or carbolic acid; blenorrhœa of the sac was treated by splitting the canaliculus and use of protargol.

JACKSON (Denver) had used with decided benefit an application of nitric acid, and seen rapid improvement follow its use, even in the pneumococcic infections—a 20 per cent. to 50 per cent. solution.

WILSON (Elizabeth, N. J.) had had some experience with these ulcers and could endorse what Kipp said, that when one sees these striæ one can make up his mind that the infection will extend no further.

CONNOR (Detroit) said that a new remedy for the destruction of infectious germs had recently been introduced by Dr. Novee, which in solutions as weak as 1:10,000 destroyed gonococci in a few minutes without irritation, and said from the small experience he had had with it he thought it a useful agent.

Haab (Zürich) said he preferred to destroy the microbe directly by use of pure carbolic acid.

Randolph (Baltimore) called attention to the superiority of holocain over cocain as an anæsthetic in these cases prior to cauterization, and also that carbolic acid had anæsthetic properties itself.

Risley (Philadelphia) also emphasized the value of holocain, and preferred to use a double strength tincture of iodin.

Wilder (Chicago) agreed with Risley as to the value of iodin, and had dispensed with the cautery in many cases.

Taylor (Wilkesbarre) had come to use the cautery more and more, and also used a strong solution of silver nitrate.

Friedenwald (Baltimore) was somewhat suprised to hear the tincture of iodin spoken of so highly, as he had been very much disappointed in its use; he thought it invaluable for dendritic or other superficial ulcers, but had given up its use in infected ulcers.

Hiers (Savannah) used the tincture of iodin, curetting thoroughly before its application.

Greenwood (Boston) added his testimony to the usefulness of iodin, and also of iodoform powder, and said the cases were often benefited by the use of mercury.

THE NATURE AND TREATMENT OF PTERYGIA.

John O. McReynolds (Dallas, Texas) said that Professor Fuchs speaks of pterygia being peculiar to those past middle life, but that while that might be true of Vienna it was not true of the Southwesten part of the United States. He attributed the cause to heat and dust with high winds, and said it was not infrequent to see boys with pterygia; those living in the warm, dry and dusty regions were the ones who most frequently developed the growth. When the evaporation of the tears is so rapid that they do not accumulate in sufficient quantity to wash away the foreign particle, the conditions for development of pterygia were present. He described his method of operating which had given the most satisfactory results, and consisted of subconjunctival anteroinferior fixation.

Discussion.—SAVAGE (Nashville) agreed with McReynolds as to etiology of pterygium, and did not believe pingueculæ were ever transformed into pterygia; he believed all these growths were due to foreign bodies imbedded in the cornea, the bodies being too small to be noticed at the time; the process is one of ulceration, the extension bringing about changes in the epithelium, then the conjunctiva becomes swollen, the limbus overlapping the cornea and becoming adherent to the base of the ulcer; men who are exposed in sandy countries are the most frequent sufferers. He had done the McReynolds operation more than a hundred times with only 2 per cent. of failures.

WOOD (Chicago) endorsed what Savage said of the operation, and said a most important thing was the excellent cosmetic effect; that after the operation one cannot tell that it has been done. He said that one of the chief factors was heat, as in their part of the country, although there was much wind and dust, the moist atmosphere prevented the frequent occurrence of trouble.

JACKSON (Denver) emphasized what the other men had said as to the value of the operation.

HOLT (Portland) and SUKER (Chicago) had also used the operation with success.

THIOSINAMIN IN CORNEAL OPACITIES.

GEO. E. SUKER (Chicago) referred to the use of thiosinamin as a resolvent of cicatricial tissue in the removal of keloids, lupus, urethral strictures and rheumatic joint-affections, which led to experiments to determine its efficacy in ophthalmic practice. It is an active alterative, belonging to the same group as potassium iodid and mercury, and its use is indicated in corneal opacities from any cause, cicatricial contraction of the lids, exudative choroiditis, symblepharon, capsular opacities, and cicatricial ectropion. Experiments were made to determine whether it would prevent the maturing of cataracts, but no results of value were obtained. The best mode of administration is in three-grain capsules once or twice a day. After the patient has been taking it for five or six days it is well to intermit a week or ten days. It is a marked tonic, favors absorption of exudates, clears up corneal nebulas, and produces local reaction without systemic disturbance.

SHERMAN (Cleveland) had used it in a case of interstitial keratitis in which the vision was reduced to $^{20}/_{100}$, and, after using the drug in one-grain doses t. i. d. for a year, the vision was improved to $^{20}/_{40}$; he had reported 33 cases of its use, with marked benefit in each case, and was of the opinion that it is a valuable remedy, especially in cases of a vascular character.

Discussion.—RANDOLPH (Baltimore) alluded to its use in tinnitus, in which class of cases he had found it of benefit, given in half-grain doses t. i. d.; in some cases it had produced distressing vertigo.

SUKER, in closing, said the tendency to vertigo would be overcome by its continued use, and he had not had a patient who could not take three-grain doses.

SHOULD THE GENERAL PRACTITIONER HAVE A WORKING KNOWLEDGE OF THE OPHTHALMOSCOPE AND TRIAL LENSES?

A. R. BAKER (Cleveland, O.) considered that it was possible for the average medical student to gain a working knowledge of the instrument in the time allotted him. Twenty years ago that was not so, but the student now enters the medical school having learned how to study, and comes to his senior year with a trained mind, trained eye and trained hand; it is the exception that one of them does not see the fundus the first time he takes the instrument in his hand and is able to make a drawing of what he sees, and they gain a good practical knowledge of its use before they graduate.

TEACHING OPHTHLMOLOGY TO UNDERGRADUATES.

F. C. TODD (Minneapolis, Minn.) said he considered the subject under the two heads—didactic teaching and clinical work; there should be text-books adapted to the student's needs, from which lessons could be given; the most valuable method is clinical teaching, where a series of cases can be presented for illustration. Laboratory work should be taught the student before he comes into the clinic; he believed there were certain portions of ophthalmology essential to the general practitioner, as the differentation between glaucoma and iritis. He thought that while formerly too little attention was paid to the specialties, we were now going to the other extreme.

Discussion.—BURNETT (Washington) thought the less the general practitioner had to do with the ophthalmoscope the better, because ophthalmoscopy is an art by no means easy to learn, and one that requires constant practice, and "a little knowledge is a dangerous thing." To be of real value, the intrument must be used by an expert.

WOOD (Chicago) said they had given up operating before large classes, and preferred to teach by use of a projecting apparatus, insisting that the student should understand the eye symptoms of disease as thoroughly as any other symptoms.

WILDER (Chicago) was in accord with the views of Baker, that the general practitioner should have a good knowledge of ophthalmoscopy, and described in detail the method of teaching at the Rush Medical College, which consisted chiefly of practical instruction in the clinic.

JACKSON (Denver) thought that ophthalmoscopy should be considered a very important branch in the education of the general practitioner, and that it was being too much neglected. He considered it just as important as the teaching of microscopy.

SUKER (Chicago) thought that a student, before he is graduated, should be able to describe the normal fundus if nothing else; he should be able to appreciate the variations in the normal fundus.

CONNOR (Detroit) thought the students should be taught ophthalmoscopy, if only to let them see that there was something absolutely certain in medicine.

KNAPP (New York) did not think any retrograde movement should be encouraged in this respect; that in Vienna one could not get a license to practice medicine without passing an examination in ophthalmoscopy, and that we, as a progressive country, would soon have the same requirements.

CRUM (Utica) thought that teaching ophthalmoscopy properly would cause the general practitioner to fully appreciate the skill required, and enable them to send their cases to the oculist at the proper time.

Carmalt (New Haven) thought the discussion really belonged to another department, as the ophthalmologists themselves were practically all agreed on the importance of the proper teaching of the subject.

Allport said that in his teaching he used the papier maché eyes, and found them of great aid.

In closing, Baker said that the student could be taught to use the ophthalmoscope in just as short a time with the dilated pupil as with the papier maché eyes.

(Continued next issue.)

PROGRAM OF THE THIRTY-EIGHTH ANNUAL MEETING OF THE AMERICAN OPHTHALMOLOGICAL SOCIETY.

Held on Wednesday and Thursday, the 16th and 17th of July, at the Pequot House, New London, Conn.

1. A New Eye Speculum. Dr. F. D. Skeel.

2. The Post-Operative History of Fifty Cases of Simple Chronic Glaucoma. Dr. C. S. Bull.

3. Notes on Some Cases of Simple Chronic Glaucoma Treated by Resection of the Superior Ganglion of the Cervical Sympathetic, with Sections of Ganglia. Dr. J. E. Weeks.

4. A Case of Endothelioma of the Orbit. Dr. C. A. Veasey.

5. Melano-Sarcoma of Orbit, with Microscopic and Macroscopic Specimens. Dr. S. B. St. John (Pathalogical Report by Dr. A. J. Wolff).

6. Report of Case of Congenital Orbital Cyst, with Microphthalmus. Dr. G. C. Harlan.

7. Ossification of Choroid, with Report of Four Cases and Résumé of Literature to Date. Dr. B. L. Millikin (with assistance of Dr. J. C. Darby).

8. A Case of Metastatic Carcinoma of the Optic Nerve, with Peculiar Degenerations of Both Nerves—Clinical and Pathological Report. Dr. Ward A. Holden.

9. A Case of Double Metastatic Carcinoma. Dr. E. E. Jack (Pathological Report by Dr. Verhoeff).

10. A Case of Cavernous Sinus Thrombosis. Dr. E. E. Jack (Pathological Report by Dr. Verhoeff).

11. The Conjunctival Flap and Cataract Wound. Dr. F. M. Wilson.

12. Case of Delirium Tremens following Cataract Extraction. Dr. T. R. Pooley.

13. Death from Diabetes After Cataract Extraction. Dr. T. R. Pooley.

14. Some Recent Experiences with Sub-Conjunctival Injections in Orbital Disease. Dr. C. S. Bull.

15. Report of Examination of Eyes of Children in Public Schools of Memphis. Dr. J. L. Minor.

16. A Simple Use of the Circle of Diffusion in the Correction of Ametropia. Drs. Wm. Thomson and A. G. Thomson.

17. The Use of Models in the Teaching of Ophthalmology, Especially as to Refraction and Convergence. Dr. B. A. Randall.

18. On the Insertions of the Ocular Muscles. Dr. L. Howe.

19. The Ideal Result to be Kept in View in the Operative Treatment of Convergent Strabismus in Children. Dr. S. Theobald.

20. A Note on the Ophthalmoscopic Variations in the Normal Fovea. Dr. H. T. Hansell.

21. On the Confusion of Methods in Using Prisms. Dr. L. Howe.

22. Additional Notes of a Case of High Astigmatism. Dr. B. L. Millikin.

23. A Case of Unilateral Temporal Hemianopsia in which the Wernicke Hemianopsia Pupillary Reaction was Present. Dr. C. J. Kipp.

24. Two Cases of Detachment of the Retina Traumatic in Origin, Treated by Drainage Incision. Dr. W. K. Rogers.

25. A Methyl-Alcohol Debauch and Its Results. Dr. H. W. Ring.

26. Several Cases of Unusual Eye Disease. Dr. J. H. Claiborne.

27. A Case of Vicarious Menstruation from the Lower Lids. Dr. J. H. Claiborne.

28. Histologic Study of the Lenses of a Hanged Criminal. Dr. C. A. Oliver.

29. Study of the Ocular Changes Produced by the Injection of Pure Cultures of the Bacillus Typhosus into the Vitreous Chamber of Rabbits and Guinea Pigs. Dr. C. A. Oliver.

30. The Extraction of Steel from the Vitreous Chamber. Dr. S. D. Risley.

31. The Value of Partial Resection of the Tarsal Cartilage in the Operative Treatment of Congenital Ptosis. Dr. E. Gruening.

32. Circumscribed Exudative Choroiditis. Dr. H. Friedenwald.

33. On Improvement of Vision in Amblyopia. Dr. H. Friedenwald.

INFANTILE OPHTHALMIA.

E. Treacher Collins (*The Practitioner*, London, April 1) summarizes the measures which at the present time are best qualified to reduce the amount of blindness in ophthalmia neonatorum, as follows:

1. Compulsory notification of cases of ophthalmia neonatorum by all persons attending women in labor other than medical men.
2. Instruction as to the importance of the universal adoption of prophylactic measures (preferably Credé's method, or the use of a sublimate solution, 1 in 2000, or protargol 20 per cent.) by all lecturers and writers of text-books on midwifery.
3. The appointment of ophthalmic surgeons to maternity institutions, more especially those which provide for attendance of women at their own homes.
4. The provision in all midwifery bags of a drop bottle labeled "drops for the eyes."
5. The better training of monthly nurses in the methods of aseptic cleanliness.

ABSTRACTS FROM MEDICAL LITERATURE.

By W. A. SHOEMAKER, M.D.
ST. LOUIS, MO.

REPORT OF SEVERAL CASES OF CORNEAL COMPLICATIONS IN CONJUNCTIVITIS DUE TO THE KOCH-WEEKS BACILLUS.

Edward A. Shumway (*Philadelphia Medical Journal*, April 26) thinks that the Koch-Weeks bacillus conjunctivitis is becoming more common in Philadelphia. It frequently presents itself in a severe form and may be complicated with phlyctenules and ulcers of the cornea. The same types are very contagious and every precaution should be taken to prevent the spread of the affection, especially among school children. The author recommends the use of mild astringent lotions and applications of 2 per cent. solutions of nitrate of silver.

THE SPONTANEOUS CURE OF SENILE CATARACT.

Sidney Stephenson (*The Lancet*, April 26) reports the following case:

Female, aged 55 years, V. O. D. = fingers at 1 meter, unimproved. V.O. S. = fingers at 4 meters, with — 9 D.S. = $^1/_6$. The right lens was opaque in its deeper parts, with a posterior polar opacity. The left lens showed a posterior polar opacity and opaque striæ in the cortex.

Floating opacities in the vitreous present in both eyes. Eight years later the patient was seen again.

V. O. D = fingers at 35 cm. Cataract nearly mature; V. O. S. with + 10 D. S. = $^2/_3$. The anterior chamber was deep, the pupil clear and black, the iris sluggish and tremulous, and the tension normal. The lens was dislocated and lying in the lower part of the vitreous chamber. The patient was seen for the third time two years later. The pupil of the right eye was found clear and black, the iris tremulous, the anterior chamber deep, and the lens dislocated downward into the vitrious humor. T. normal; V. with + 9 D. S. = $^2/_3$.

ATROPHY OF THE OPTIC NERVE AND ITS TREATMENT BY THE SUBCUTANEOUS INJECTION OF STRYCHNIA.

Hasket Derby (*Medical Record*, May 24) from his experience, draws the following conclusions:

1. Strychnia is a stimulant to the optic nerve. Even in normal eyes it slightly increases the acuteness of vision and widens the visual field. These effects are temporary.

2. In certain cases of optic nerve atrophy its local subcutaneous injection has, to say the least, coincided with an arrest in the progress of the disease, and has been followed by a somewhat increased acuteness of vision. Whether these effects are temporary or permanent, time and fuller statistics will show.

3. In a progressive case of this disease it is clearly our duty to state the above facts to the patient and allow him to take the treatment if he is so inclined.

4. The strychnia should always be administered in the temple, and by subcutaneous injection.

OCULAR AFFECTIONS ASSOCIATED WITH GLYCOSURIA, WITH ESPECIAL REFERENCE TO CENTRAL AMBLYOPIA.

Walter L. Pyle (*American Medicine*, April 19) draws the following conclusions:

1. Diabetes mellitus, or any disturbance of carbohydrate metabolism may affect any portion of the visual apparatus.

2. The ocular changes may be produced by chemic or physical means, or indirectly through the associated general debility.

3. They may vary in intensity from slight failure of accommodation to a formidable hemorrhagic retinitis and total optic nerve atrophy. Minor visual disturbances are often aggravated by fatigue or increased cardiac action, and may improve after rest or decrease of the vascular tension.

4. The intra-ocular disturbances may be exclusively unilateral, and there is never seen ophthalmoscopically inflammation of the optic nerve—important differences from the changes in albuminuria, syphilis and other blood dyscrasias.

5. Albuminuria does not infrequently co-exist with glycosuria, and the retinal changes may present a mixed picture, or a typical albuminuric retinitis may occur in diabetes.

6. Central amblyopia may exist in glycosuria entirely independent of the toxic influence of alcohol and tobacco, or in habitual users these may become a prominent factor in the causation. In these cases the initial lesion may be in the retinal ganglion cells; the inflammation of the "papillomacular fibers" of the temporal half of the optic nerve being secondary.

7. In chronic glycosuria, with the exception of cataract, ocular symptoms are often present when the constitutional and urinary symptoms are not marked.

8. The ocular symptoms may be the first to lead the patient to seek medical advice; therefore glycosuria should be suspected in the following conditions: (*a*) Premature presbyopia. (*b*) Unexplained mydriasis or cycloplegia. (*c*) Sudden change in the refraction; particularly, marked development or increase of myopia past middle age, without cataractous changes. (*d*) Intractable iritis. (*e*) Cataract in young or middle-aged persons. An examination of the urine is advisable even in cases of senile cataract, as the etiology has a bearing on the prognosis of operation. (*f*) Retinitis, particularly of the hemorrhagic variety. (*g*) Unexplained optic nerve atrophy. (*h*) Sudden and marked amblyopia, particularly central, without visible fundus changes.

9. The prognostic significance of ocular disturbance is not definitely established on account of the great difficulty in pathogenesis, severity and ultimate issue of the various forms of glycosuria. In well-marked cases many forms of eye lesions may improve and the patient's general health may be restored. The ocular symptoms do not progress according to any rules. Hemorrhagic retinitis and amaurosis preliminary to coma are the most serious symptoms. The ophthalmoscopic observation of greatest value in the prognosis is the state of the retinal vessels, as this may be taken as an index to the patient's general vascular condition.

A PLEA FOR THE EARLY TREATMENT OF SQUINT.

Nelson Miles Black (*Journal American Medical Association*, May 24) urges the necessity of treating strabismus as soon as it makes its appearance, for the following reasons:

1. In rare instances the squint disappears as the patient

grows older, but nearly always with vision much impaired in the deviating eye and binocular vision very imperfectly developed.

2. The earlier one can get a case after he has commenced to squint, the better the prognosis as to the parallelism of the eyes, binocular vision and visual acuity of each individual eye, because the case is in the developmental stage.

3. In regard to wearing glasses, the contrary is true. If a case can be obtained for treatment soon enough after the squint is noticed, the glasses, in the majority of cases, can be laid away about or soon after puberty, being only needed for close application of the eyes, except of course in cases of high hyperopia, myopia or astigmatism.

He agrees with Mr. Claude Worth of London regarding the etiology of squint, *i. e.*, "that the potential factor in a cause of squint, of course taken together with the several other etiologic factors, as hyperopia, myopia, anisometropia, congenital amblyopia, fundus changes, changes in the refractive media, heredity, local changes in an ocular muscle, etc., is the defective or non-development of the fusion sense."

Mr. Worth has determined that the fusion sense is fully developed by the sixth year; after that it is almost impossible to develop it.

The factors to be dealt with in every case of strabismus are:

1. The deformity.
2. The suppressed vision of the deviating eye.
3. The more or less amblyopic condition of the deviating eye in the majority of cases.
4. The refractive errors.
5. The fusion sense.

For the maintenance of fixation, and to prevent deterioration of vision in the deviating eye, the author bandages the good eye, or keeps it under the influence of a mydriatic. When there is ametropia he orders the proper correction as early as eighteen months. The development of the fusion faculty is accomplished by means of Worth's amblyoscope, and, after the visual axes have become nearly or quite parallel, the stereoscope. If, after the fusion faculty is well developed, the deviation still exists, he advises operating.

THE AMERICAN JOURNAL
OF
OPHTHALMOLOGY.

VOL. XIX. AUGUST, 1902. No. 8.

ORIGINAL ARTICLES.

CLINICAL REPORTS.*

By Dr. CASSIUS D. WESCOTT.

CHICAGO.

DR. C. D. WESCOTT, of Chicago, said that ever since his pupilage in ophthalmology he has had a prejudice against hopelessly blind eyes, made so by traumatism or inflammation of the anterior segment of the globe. The fact that there is a well-known difference of opinion as to what we should recommend in such cases, is his excuse for bringing up the subject.

As an illustration of what may happen in consequence of retaining an eye blind from traumatism, in spite of the fact that the eye is quiet, not shrunken, not painful, not tender, he recounted the following case: Going through the hospital one morning he saw a man about forty years of age with a red eye. The appearance of the eye at once suggested the presence of sympathetic ophthalmitis. He glanced at the other eye and saw that the cornea was entirely opaque from leucoma adherens. He asked the man when that eye was injured. He said eleven years before, and gave an account of the usual acute, painful inflammation following such an injury, but added that for ten years the eye had been painless and never inflamed. The eye was not red at the time of the examination; it was not tender to the touch; it was not shrunken, and tension was normal. In the sympathizing eye there was double injection, cloudiness of the aqueous, swelling and cloudiness of the iris, with adhesions which could not be broken up with atropin; in other words, a well-marked irido-cyclitis, with the tenderness and pain. He told the patient that the injured eye must be removed at once, although he was fearful that he could not save the affected eye. Enucleation was done immediately; the affected eye was treated to the best of his ability, with rest in bed, fomentations, atropin, leeches, iodides, salicylates, etc., all to no avail. The eye went on to complete blindness. He showed a section of the enucleated blind eye, which showed at the time no evidence of acute inflammation, and the patient said the eye had not been red, or tender, or painful in the preceding ten years.

---

*Read at the meeting of the Western Ophthalmologic and Oto-Laryngologic Association, held at Chicago, April 10, 11 and 12, 1902.

Shortly after this experience a medical student consulted him, suffering from eye strain. An examination of one eye showed a moderate degree of astigmatism, which slightly reduced vision, and for which a correction was prescribed. The other eye was blind from an injury similar to the injury which destroyed the eye in the previous case. The eye was quiet, free from redness and tenderness, but soft and shrunken. His advise to the medical student, as it has been to all patients similarly afflicted, was to have the useless eye removed. As he could have the benefit of the advice of any number of good ophthalmologists, it was suggested to him that he consult anybody in Chicago with whose name he was familiar. He saw several local men, and only one advised him to have the eye removed. He was told that the eye might some time cause trouble in the other eye; that a glass eye would look better than the shrunken globe, and he would better have it out. The patient yielded to Dr. Wescott's advice and the eye was removed. He has ever since used his remaining eye with much more comfort and ease than he had for years previously. However, that fact might be attributed to the accurate correction which was given for his astigmatism.

He brought these cases before the Association for the purpose of eliciting a discussion, which he hoped would be free. He desired to know what is the practice of those present under such circumstances.

He thought they were all familiar with the discussion of this question before the British Medical Association in 1899, also with the paper by Dr. Ayres, of Cincinnati, before the American Ophthalmological Society in 1900. But it is evident that all were not agreed as to what is the best thing to recommend and to do in the case of hopelessly blind eyes, made so by traumatism and destructive inflammation of the anterior segment of the globe, when they are quiet and free from redness or tenderness. Ophthalmologists are all agreed as to what to advise in case one of these useless eyes becomes red and tender, the seat of the irido-cyclitis. But he brought before the Association the first case as a demonstration of the fact that sympathetic inflammation may follow eleven years after an injury without any evidence of acute inflammation in the injured eye during all that period of time.

There is another class of blind eyes, in regard to which there has been some question. Here is an example: A child, four and a half years of age, was brought to him because it had been discovered accidentally that the child was blind in one eye. Examination showed that the pupil was small; that there were posterior synechiæ; there was slight tenderness, and slight reduction in the tension of the eyeball; there was no ciliary injection. It was impossible to get a full dilatation of the pupil after repeated applications of atropin; but a moderate dilatation was obtained, and looking in he saw a clear lens except for the adhesions between the iris and the lens. He got a dirty-gray reflex from the fundus. It was impossible to say definitely whether this was due to exudate in the vitreous, a detached retina, or a tumor. But the eye was blind. It was a little bit soft; there was evidence of inflammation at the anterior segment of the globe. There was the reflex from the inside, which suggested glioma. He strongly urged the parents to have the child's eye removed at once. They preferred not to have additional consultation, but thought over the matter, and finally came back because the child's eye was a little inflamed. After being urged again to have the eye removed, they consented. The speaker exhibited the specimen, which presented a peculiar condition, a detached retina, which also contained a small glioma, justifying the removal of the globe.

He exhibited another eye, which was removed from an elderly patient, who consulted him first in regard to glasses. At the examination he found that vision was low in one eye. The patient was a busy railroad official, and could not give the time for a mydriatic, but was urged strongly to return soon for a more thorough examination, because the speaker found vision of $^6/_{22}$ in one eye, whereas he had $^6/_6$ in the better one. The patient did not return until the glasses no longer served him, which was about two years. At the first examination ophthalmoscopic appearances, as seen through the small pupil, were unsatisfactory. There was a suggestion of cloudiness as he looked at the disc, nothing more. Two years later the lens was found a little hazy, and there was a little more cloudiness of the disc. He was urged again to permit the use of a mydriatic, and to have a more thorough examination made. Patient said to Dr. Wescott: "Please give me stronger glasses now, and I will come back to-morrow, or as soon as I can, for another examination." He did not return for another year, and then at the solicitation of the family physician, who noticed that the lens was cataractous and crowded into the pupil. The lens was quite opaque; the anterior chamber shallow; no pain; no redness; tension, +1; no projection. He told the patient there was a suspicion of intraocular growth; that if there were a tumor, it was malignant, and the eye should be removed. Dr. Wescott then showed the eye, which presented one of those umbrella-shaped sarcomata of the choroid, already passing through the sclera, alongside the optic nerve.

The sequel of the story is the sad part. There was no recurrence of the tumor locally. In eighteen months the patient was ill, and in two years' time from the removal of the eye he was dead. At the post-mortem examination metastases were found in the liver and along the spinal column. Probably if this man had consented to the use of a mydriatic at the first or second examination the beginning of this growth might have been suspected, although that is questionable.

He simply reported the last two cases to bring out a discussion with regard to the removal of blind eyes in which one could not be positive as to the diagnosis.

DISCUSSION.

Dr. Eugene Smith, Detroit. — It is probably the opinion of every one of us who has had any experience in these cases that the doctor's treatment was the proper thing. There is no question about the propriety of taking out these old blind eyes. We do not know what moment trouble may arise from them. I have seen such cases produce sympathy without inflammatory reaction in the injured eye. Many such eyes when taken out show in the stump little plaques of bone. Sometimes a slow inflammation is going on, and produces trouble in the fellow eye, yet the patients usually dislike to have such an eye removed. I never look upon a blind eye as safe until it is in my cabinet.

Dr. Alt, St. Louis.—I wish to remind you that I made the microscopical examination of one of Dr. Ayers' eyes, which he thought were free from inflammatory symptoms, and yet there was bone formation of long standing and also a recent inflammation in spots, just as seen in septic infection; and so, while there was no outside appearance of inflammation, the eye had been and was in a chronic inflammatory state. I suppose we all have a number of such cases on our records, where we removed an eye because we feared it might become dangerous to the fellow eye, and in which we found ourselves justified by the examination of the removed eyeball.

Dr. Suker, Chicago.—Permit me to sincerely and heartily endorse in general the ideas conveyed and expressed in the admirable paper of Dr. Wescott. I thoroughly believe, as does he, that all blind eyes are a source of menace, and may endanger the fellow-eye some time or another. Hence they ought to be removed to insure safety of the remaining eye. Then, too, a large percentage of sightless eyes as the result of injuries are a cosmetic defect, and ought to be removed on that account. With reference to enucleations in children, let me say that I am seriously opposed to doing it unless absolutely compelled by existing pathological conditions; for after the removal of a globe the socket remains behind in size and shape as compared with its fellow, therefore we have a deformity resulting, which certainly is not desirable. The presence of the globe is absolutely necessary to maintain the uniform growth of the socket. No eye in a child should be enucleated unless the lesion is malignant or sympathetic ophthalmia is liable to come on or is present. I beg to differ with the remarks of Dr. Wescott with reference to the size of the socket. The investigations of certain Canadian surgeons to the contrary notwithstanding. My own personal observation fully confirms the remarks I made heretofore, and one case very recently has impressed upon me the fact that we should be conservative in this direction. It is in the case of a young man who had lost one eye as the result of measles, it having been enucleated when he was two years old. He is to-day a man of twenty-two years of age, unable to wear an artificial eye in size equal to that of its fellow because of a markedly contracted socket. Both the vertical and horizontal diameters of this socket are considerably less than those of its fellow.

DR. WESCOTT (closing discussion). — In reply to Dr. Suker, I would say that recently observations have been made in a number of cases in regard to this question of the shrinking of the orbit or failure to develop after removal in children. Dr. Byers of Canada proves by measurements that so far as the bony orbit is concerned there is no difference in the size of the two sides, even though the globe has been removed in childhood.

OCULAR AFFECTIONS SECONDARY TO SYPHILIS.*

BY RANDOPH BRUNSON, M.D.,
HOT SPRINGS, ARK.

OF all diseases of the eye, probably syphilis is responsible for a greater number of ocular affections than any one disease known, so I cannot, in the short time alloted to each paper, go into an exhaustive study of diagnosis, prognosis and treatment, but will confine my remarks to giving you the essentials of diagnosis, and take up each subject as seen from the anterior aspect of the eye. *Secondary syphilitic ulcers* may occur on the eyelids from the breaking down of a gumma originating in the skin or in the subcutaneous tissue and cartilage.

---

*Read at the meeting of the Western Ophthalmologic and Oto-Laryngologic Association, held at Chicago, April 10, 11 and 12, 1902.

The most frequent location of the lesion is in the skin, near the lid margin, or below the inner canthus, though it may occur on the conjunctival surface of the lid. It manifests itself usually at a late stage of the disease, and should be classified as a tertiary lesion. The fact that this lesion may occur after all other symptoms of syphilis have subsided necessarily makes a diagnosis rather difficult, especially if it is situated over the lachrymal sac; in this event, dacryocystitis is apt to be confounded with it. It is at times difficult to differentiate between this lesion and epithelioma, as the latter occurs more frequently on the eyelids than elsewhere.

The Conjunctiva is very rarely affected primarily, but inflammation usually occurs when the iris and ciliary body are involved, the œdema seen in these cases being caused by an obstruction of the return flow of the circulation. It has been my good fortune to see one case of gumma of the conjunctiva, this in a man thirty-six years old, who had been infected six years previously. The patient had received treatment for about three months after the initial lesion, and also the following year he had taken more or less treatment, but, as all symptoms of syphilis had long since disappeared, he did not appreciate the necessity of further treatment, and the gumma of the conjunctiva was a result four years later. When I first saw him there was a round, hard mass, the size of a pea, glazed in appearance, and almost white, situated near the sclero-corneal junction, on the outer side of the right eye. A diagnosis was not made at the time, as I was uncertain as to the character of the trouble, and I requested him to return later in the week, though he gave me a history of syphilis. Upon his return a few days later, he told me that he had spent a very uncomfortable night with his eye. Examination disclosed a true broken-down gumma, ulcerated, and the whole surrounding tissue deeply injected. A salve of iodoform was prescribed to be used locally, and subcutaneous injections of the albuminate of mercury were begun at once. After twelve injections, one given daily, the gumma completely disappeared, except a slight contraction of the tissue. For the past five years I have made a practice of examining the conjunctiva of each syphilitic coming into my office; my object in doing this was to find a mucous patch, but so far my efforts have been in vain; however, I expect some day to find one, as there does not seem to be any reason why they should not be found on the conjunctiva as they are elsewhere.

The Lachrymal Sac and Duct is frequently invaded by syphilis through the nose. In all the cases of stricture of the lachrymal canal due to syphilis which have come under my observation, I have always been able to find the cause in the nose. Syphilitic rhinitis, both acute and chronic, is very common; and when we have great destruction of the nasal bones and membranes, dacryocystitis usually occurs with varying severity.

The Iris and Ciliary Body is perhaps more often invaded by syphilis than any one part of the globe, and syphilis is most often the common predisposing cause of iritis. About 70 per cent. of all cases of iritis are caused by this disease; and I have found, in the examination of the histories of fifteen hundred cases of syphilis, that iritis occurred in over 3 per cent. of all cases. There are a certain number of cases in which the clinical aspect will not give any indication of the constitutional cause of the inflammation, so we are more or less dependent on the history of the case and other data to confirm our diagnosis. In syphilis there are a certain number of characteristic signs in a given number of cases which will allow us at once to recognize the etiology of the disease, the most palpable of which are the papules—small raised masses imbedded in the iris, usually not exceeding three in number, and generally located in the pupiliary zone, but they may be seen at the periphery of the anterior chamber or elsewhere. They begin as small points, increasing in size, until finally in a few cases they may attain such size as to touch the posterior surface of the cornea. During this time their color changes from a reddish brown to a lighter shade, and on close inspection we will find numerous small vessels surrounding them. They may disappear completely, or leave small arch-shaped synechiæ. A white line is not infrequently seen at the bottom of the anterior chamber, which is due to the accummulated debris of broken-down condylomata. At the pupilary edge of the iris a rusty hue is sometimes observed, and is probably due to condylomatous masses diffused throughout the tissues in that position. The posterior synechiæ in this form of iritis are suggestive of the etiology of the trouble, as they are broad and dark in color, thus differing in a marked degree from those of rheumatism, for instance, which are thin and light in color. This then is the iritis of secondary syphilis, which is nearly always of a plastic type and has little tendency to recur. In most all cases attachment between the iris and the lens capsule takes place. Hereditary syphilitic iritis appears in the first few years of life and at a much later period. According to Hutchinson, infantile iritis begins about at the average age of five months, affects females more often than males, attacks one or both eyes, and, though generally associated with the pretty free exudation of lymph, is not much marked by redness of the eye. The cornea remains clear throughout the attack, and the ailment is attended by few of the more severe symptoms met with in adults. Most of the cases show one or more of the signs of hereditary taint—as cachexia; psoriasis—like or other cutaneous eruptions; aphthæ, or sores about the mouth; condylomata about the anus; or snuffles. When iritis attacks older subjects, it may occur alone or with interstitial keratitis. If alone, the inflammation usually appears in the ciliary body, and spreads to the iris at a later stage; so we have an irido-cyclitis. It is very hard at times to recognize, as patients may not show any signs of hereditary syphilis elsewhere. In other cases we may find associated with it disseminated choroiditis, which is characteristic of syphilis. The iris reacts to light very sluggishly; ciliary congestion, purplish in color and patchy in distribution is present. Sometimes a pupil may get blocked by a grayish layer of debris which seems to cling to the edge of the iris, and punctate deposits constantly appear in the cornea. Secondary glaucoma is a frequent sequel. In hereditary syphilis, iritis assumes the form of a serous irido-cyclitis, and may appear alone or with interstitial keratitis.

Syphilitic Cyclitis may be plastic, serous or gummatous, and is almost invariably associated with iritis. The symptoms are pain, diminished vision due to deposits upon the posterior surface of the cornea, precipitates in the vitreous, exudations between the iris and lens capsule, and ciliary injection. Galezowski, in studying symptoms of syphilis in the ciliary body, says:

"1. Whenever syphilitic iritis is accompanied by punctate keratitis, either chronic or recent, areas of atrophic choroiditis will be found in the ora serrata.

"2. In parenchymatous interstitial keratitis, when due to hereditary syphilis, disseminated plaques, which sometimes reach the posterior segment, are seen in the ora serrata; more often, however, they are confined to the ciliary region.

"3. Diffuse syphilitic choroidits, with disease of the vitreous, always presents atrophic alterations of the ora serrata, and the opacities of that humor are due to the latter lesion.

"4. In ataxic atrophy of the discs, atrophic and pigment changes occur in the ora serrata.

"5. In syphilitic inflammation of the cerebral or cerebrospinal nerves, characteristic signs of the disease appear in the ora serrata."

Gallenga reports two cases of syphilitic gumma of the ciliary body, but I have never seen a case. Before leaving the subject of irido-cyclitis, I wish to make a few remarks upon the pathogenesis of primary iritis of syphilis. Brailey says: "Almost all ailments capable of giving rise to inflammation of the iris are intimately associated with if not actually caused by micro-organisms. As regards syphilis, gonorrhœa, tubercle, leprosy, influenza, and relapsing fever, this fact will be disputed by none. Organisms have been described in many fevers—typhoid, small-pox and pneumonia—during recovery from which inflammatory affections of the iris and ciliary body may occur. From all the facts brought to bear on the subject, it would indicate that syphilitic iritis is due to the presence of microbes."

Alexander believes that specific iritis is produced by vascular alterations, and points to the fact that Fuchs and Friedel have shown that the walls of the vessels of the iris are the seat of a gummatous degeneration. Brailey states that the ordinary form of the disease appears as an early secondary symptom during the time when the specific virus is diffusing itself by means of the blood throughout the entire economy. Nodular growths, or condylomata, are present in every case, and are strongly suggestive of local irritation, such as might well be set up by bacilli deposited from the aqueous humor. Bronner has given particulars of three cases in which concussion of the eyeball was followed speedily by local syphilitic disease. In many cases of irido-cyclitis the patient tells us that the disease was set up by some slight injury to the eyes. A case in question came under my care two weeks ago. Mr. M., age 38 years, was walking along the street, carnival week, and a woman threw confetti into his face, some of which got into his left eye, producing at the time more or less irritation. Two days later he came into my office with a typic case of specific irido-cyclitis. A history of syphilis was obtained, but he had never had iritis before, so it would seem that the bacilli deposited by the aqueous humor were there, and only required some slight irritation to start them working industriously.

Interstitial Keratitis has its origin in syphilis in perhaps 60 per cent. or more of all cases of this variety of disease of the cornea, and the true form is always hereditary. I have never seen a case caused by acquired syphilis, and believe the cases reported as such have simply been produced by irido-choroiditis, which have involved the deep layer of the cornea. Antonelli directs attention to the ophthalmoscopic appearance in congenital syphilis, namely: "A certain degree of pallor, sclerosis of the papilla, a massing of pigment on the papillary border, a certain narrowing of the retinal arteries, and a granular state of the retinal pigment." The symptoms of this variety of keratitis are a grayish discoloration at the periphery or some other part of the cornea. This color soon spreads over the whole of the membrane, which is infiltrated and its surface dull. At first the infiltration is translucent, then it becomes thickened and of a grayish tint, which becomes darker, until the iris is quite obscured. There is ciliary injection without congestion of the conjunctiva. Lacrhymation, photophobia and ciliary pain are also present, the latter due to iritis, which is nearly always present in these cases. The deep punctate keratitis of syphilis is situated in the deeper planes of the cornea; the iris, ciliary body and choroid are always invaded. We have numerous small, deep infiltrations appearing in front of Decemet's membrane and in the center of the cornea. These infiltrations may become ulcerated in a few cases, and leave very dense and permanent opacities.

A word in regard to treatment of these forms of keratitis; I have never seen a case, however ill-nourished and cachectic the patient may have been, that small doses of mercury did not act in a most satisfactory manner from the very start of the treatment. It seems to exert a tonic influence.

Disseminated Choroiditis is caused by syphilis in perhaps 80 per cent. of all cases. In acquired syphilis the disease makes its appearance in from six to eighteen months, or possibly longer after infection. In hereditary syphilis it comes on in the first three or four years of life, or probably at a later date. In the early stage in the acquired form we see perfectly round white spots of a pinkish hue. The retinal vessels are clearly seen as they pass over the spots. The next change takes place in the center of the spot, which becomes very white; at the same time the pigment ring begins to show itself and gradually becomes darker. The pigment ring and other details now sharpen up, and the enclosed surface appears as a dull, yellowish-white plaque. Sometimes little shreds of lymph are seen during this stage, attached by one edge to the choroidal plaque and undulating in the vitreous. Patches of complete atrophy appear, bounded by a ring of black pigment; the entire surface in this ring is white, or bluish-white, and glistening, and we cannot see any trace of the choroidal vessels or pigment, yet the retinal vessels go across without interruption. The appearance of the fundus between the choroidal spots is usually normal. When the inner layers of the retina become affected, the case is always more or less serious, and a loss of sight may take place either from atrophy of the disc or from detachment of the retina. Iritis, interstitial keratitis and scleritis may make their appearance during the course of the disease. Liquefaction of the vitreous may take place, with partial or complete dislocation of the lens. The occurrence of a group of yellowish-white flecks near the macula, and of dust-like opacities of the vitreous, with changes in the walls of the choroidal and retinal vessels, is nearly always characteristic of syphilis.

Syphilitic Chorio-retinitis is always characterized at first by fine dust-like vitreous opacities and increased redness of the disc, which latter is surrounded by a halo of grayish discoloration. There is an absence of the patchy condition characteristic of choroidal inflammation alone. This form is frequently preceded by iritis. Night blindness is usually a marked feature. The field of vision rarely shows any marked diminution. In the early stages the diagnosis is quite difficult; there is a smoky appearance of the details of the fundus, however, which is characteristic. The vitreous opacities, increased redness of the disc, and opacities of the surrounding retina, are frequently the only diagnostic signs. Later, as the disease progresses, there is often found overfullness of the retinal veins, with a contraction of the calibers of the arteries and paleness of the disc.

Opacities of the Vitreous are a frequent manifestation of syphilis, and when they have the appearance of fine dust-like particles in the posterior part of the vitreous, we can most always ascribe the cause to chorio-retinitis.

Syphilitic Retinitis, pure and simple, does exist, and it seems to be beyond any question, as such careful and painstaking observers as Leibreich, Mooren and Mauthner have reported cases, while Ole Bull reports its occurrence in half of all the syphilitic cases seen by him.

We have observed in cases of severe iritis more or less irritation in the retina. During the past seven years I have had exceptional opportunities for observing syphilitic diseases of the eye, and in this time I have seen at least three positive cases of syphilitic retinitis without the choroid or iris being involved. The three cases were all due to the acquired form of syphilis, and appeared from four months to seven months after infection. In one case the retinitis was preceded by iritis, but the latter trouble had entirely subsided without injury to the eye. The most remarkable incident, outside the rarity of such cases, was that none of these patients had gotten fully under the influence of mercury, though each had been using inunctions for several weeks previous to the discovery of retinitis. I will not go into the details of these three cases here, as I expect soon to make a further and more elaborate report. In two cases there were dust-like particles in the posterior part of the vitreous, producing a cloudy appearance in front of the papilla. In the other case this condition was absent. In all there was a grayish opacity of the retina, and particularly along the course of the blood vessels; small, white foci were seen towards the periphery of the retina, developing along the course of the blood vessels, berry-like in appearance and covering the vessels in places. The arteries seemed somewhat thinner, and the veins were much larger than normal.

Syphilitic Hæmorrhagic Retinitis not infrequently occurs in the course of syphilis, and usually in the tertiary period of the disease. Of course, the predominating clinical symptom is a great number of hæmorrhagic spots of different sizes and shapes; dust-like opacities are seen in the vitreous, the retina appears opaque, the arteries are small, and the veins are dark and large. Persistent headache is a constant factor in this disease until the patient is thoroughly under the influence of mercury.

Relapsing Syphilitic Central Retinitis is a very rare affection; personally I have only seen one case in about 2,000 cases of syphilis which have been under my observation. There is a sudden disturbance of vision, which disappears after a few days, to reappear again. These recurrent attacks may keep up indefinitely. During the attacks the vision is very much impaired. At first the vision is very good between the attacks, but later it is reduced. There is seen a slight shadow in the macula, but the papilla and surrounding field remains perfectly clear. Fine white points appear in groups around a grayish macula, and during the intervals of attacks this cloudiness disappears entirely. In my case the trouble was cured after three months of heroic antisyphilitic treatment. Three years have intervened since the case was first seen, and there has not been any recurrent attack.

Transitory recurrent bitemporal hemianopsia may be caused by syphilitic tumors affecting the chiasma, and Oppenheimer regards this form of hemianopsia as a sign of basal syphilitic lesion. Swanzy directs attention to the fact that symptoms caused by syphilitic gummata at the base of the brain are frequently inconstant—that is to say, a nerve which is paralyzed to-day may be found to perform its functions well to-morrow, while the paralysis of some other nerve may continue. In nearly all cases of hemianopsia and blindness brought about by gumma situated somewhere in the optic tract and chiasma, if the blindness is recent, we can, with a great degree of certainty, hope for useful vision, if not entire relief. This, of course, can only be brought about through heroic antisyphilitic treatment. Diseases of the blood vessels of the retina and iris caused by syphilis, while not very common, yet occur with sufficient frequency to attract attention. Syphilis not only induces inflammatory changes in the retina, as elsewhere, but frequently produces changes similar to those that are seen in senile or albuminuric sclerosis. Blood extravasations, opacities of the vessels, and sometimes retinal opacities are seen. Haab attaches considerable importance, as a diagnostic sign, to syphilitic decrease of the retinal vessels when the opacities of the walls appear as fine disseminated scales upon the arteries. He further states that other similar vessel-degenerations rarely show this appearance. New vessel formation is quite frequent in syphilis, and takes place after hæmorrhages of syphilitic origin.

My time allowance will not admit of my taking up the optic nerve or paralyses of the ocular muscles, so these must be left for some future time.

DISCUSSION.

Dr. Alt, St. Louis, Mo,—Dr. Brunson said he had never seen parenchymatous keratitis due to acquired syphilis. This is somewhat astonishing with his material. I am sure I have seen at least four such cases due to acquired syphilis, and I know that others have been reported. I have found, as a peculiarity, that parenchymatous keratitis due to acquired syphilis seems to be confined to one eye.

Dr. Reynolds, Louisville, Ky. — Syphilis is a disease that has a natural history well known to the profession. Persons who inherit syphilis inherit it at the stage of the violence of the virus in the mother. I have seen children born during the period known as the secondary efflorescence; when the child was twenty-four hours old the secondary efflorescence appeared on its skin, and examination of the mother showed that it had appeared simultaneously in her skin; and in persons who inherit it in that way the peculiarity is inherited for two, three or four generations. When we speak of inherited syphilis, we should consider whether it is latent or advanced syphilis, or whether it was the fresh virus transmitted through the appearance of the secondary eruption. Now, the mother contracts the disease sixty or ninety days before the birth of the child, and that acquired by the child is the same as the mother's, and there is no difference between the inherited and acquired syphilis in such cases. It can be carried on as far as the running out of the child-bearing period of the mother. All the children may have it. I do not believe any syphilitic mother ever gave birth to a sound child. I am sure Hutchinson's teeth do not appear in subjects of new syphilis. I believe Hutchinson's teeth are peculiar to the second generation. I have reason for believing this. It is impossible to take the time to explain this.

DR. BRUNSON (closing discussion).—I know nothing special to say, except that I am sorry that I have not seen the cases spoken of by Dr. Alt. I hope, if I live long enough, I will. As regards the Hutchinson teeth, I had two cases about four weeks ago whom I know positively to be the children of a syphilitic father. So far as their case is concerned, I have no other data, but I know positively the father had syphilis.

EPICRITIC REMARKS UPON METHODS FOR ESTIMATING THE ECONOMIC DAMAGE FROM ACCIDENTAL INJURIES TO THE EYES.*

BY H. V. WÜRDEMANN, M.D.,

MILWAUKEE, WIS.,

Professor of Ophthalmology Milwaukee Medical College; Ophthalmic and Aural Surgeon to the Milwaukee Children's Hospital, to the Milwaukee County Hospital, Milwaukee County Hospital for Chronic Insane, to the Trinity Hospital.

IN writing this paper, the author has in mind certain criticisms that have been or might be passed upon the method of Prof. Magnus, which he has accepted and further elaborated, for estimating the earning ability after accidental injuries to the eyes. He has, therefore, arranged this essay in the form of questions and answers. In our work on "Visual Economics,"† and in the various essays in which Prof. Magnus and I have either individually written or collaborated, we have endeavored to establish the following proposition:

---

*Read before the Western Ophthalmologic and Oto-Laryngologic Association in Chicago, April 10, 1902.

†Visual Economics with rules for Estimation of the Earning Ability after Injuries to the Eyes by Magnus and Würdemann, published by C. Porth, 105 Grand Ave., Milwaukee.

For all wage earners the economic damage after accidental injuries affecting the vision may be estimated by a scientific examination and calculation.

Regarding this proposition a number of questions have arisen, the most important of which are the following:

Question 1.—Is not earning ability economically synonomous with visual earning ability for the majority of trades and professions?

Answer.—Yes.

It is self-evident that a totally blind person is absolutely incompetent in any trade or profession requiring eye-sight. An economically blind person, *i. e.*, one whose visual acuity is less than 5 per cent. of the normal, is in the same position; for, although he may be able to get about, the vision is not sufficient to allow of even the lowest grade of remunerative work. The vast majority of blind people are not only incapable of earning anything, but are a charge upon their families and upon the community. It is true that there are certain exceptions to the above proposition. There are and have been blind persons who have become poets, machinists, chair-makers, broom-makers, etc., but cases that have become economic factors are so unusual as to be commented upon in the public press and held up as especially talented and well-placed persons, who, by great labor of their teachers and by their own exceptional diligence, have been so highly educated as to be able to meet in a measure with the competition of normal individuals. In the case of an adult suddenly becoming blind, his previous economic education goes for naught, and he at once steps out of the ranks of workers.

Question 2.—Does injury to vision generally necessitate loss of earning powers?

Answer.—Yes.

Nearly all trades and professions require good eye-sight; even the coarsest sort of labor being affected if the vision falls below 50 per cent., and being impossible if it is below .05 per cent. of the normal visual acuity. For finer kinds of work, the visual range is between 75 per cent. and 15 per cent. A working man who either suddenly or gradually becomes blind loses his job. Aside from the loss of time and wages ensuant upon the injury and convalescence therefrom, poor sight certainly affects the amount and character of work, the quality and output diminishing in a direct ratio to the loss of sight, until a degree is reached where the person cannot work any more. The amount of remuneration for work necessarily depends upon its amount and its quality. This brings us to another question.

Question 3.—What is the economic value of vision?

Answer.—It is equivalent to the wages of the individual.

The pecuniary value of a man's life may, for our purposes, be expressed by the amount of money that he may earn in the course of his life. If we accept our first answer, in which we stated that the visual earning ability was economically synonymous with the full earning ability, we may value vision with the pecuniary valuation of life.

We may say that "sight is priceless," and "vision is not a commodity that may be purchased or disposed of in the market;" for there are few persons who would voluntarily allow of the infliction of any unnecessary bodily injury for any compensation whatever; but such matters of ethics do not fall within the pale of our present discussion. We are dealing with the established economic fact that injury to vision of more than a certain extent necessitates limitation of the amount and character of work. Following upon this, it is easily deduced that the amount of wages received would be less.

Question 4.—The question now arises, how are we to reckon the loss of wages?

Answer.—From experience in examining large numbers of individuals, it has been found that the loss of vision of a certain amount results in a certain effect upon the earning ability of the individual. We may also deal with futurities, and figure the probable loss in any given case by finding the percentage of damage to the normal function, and apply our reasonings to the calculation of the probable pecuniary loss. In order to do this, we have accepted the visual earning power as equivalent to the total earning power.

We must next see if the visual act can be divided into factors, and estimate the relation of these factors.

Question 5.—Can we build up a working mathematical formula for this purpose?

Answer.—Yes.

First, and most important, of the visual factors is the central visual acuity; next in importance is the visual field; and next the ocular motions. There are secondary factors comprised in the act of seeing that are physically of importance, which are the cerebral vision, the sense of light and color, and that of adaption. Accidental injury limited exclusively to any one of these factors is certainly not recognizable; for where such takes place, other portions of the visual act, especially the visual acuity, and the field are implicated. Therefore we include the secondary functions when we treat of injuries to the three primary factors of vision.

These are not of equal value, the visual acuity being the most important, the visual field next, and the ocular musculature being of less importance, We have established a formula for the normal act of seeing in which these factors have been given their relative valuations. In relating this to the earning ability, we have to add another factor of great importance, which is the ability to use the vision for gainful purposes—*i. e.*, the ability to compete in the labor market. We consider this portion of our formula to be made up of the several factors of sight expressed in their mathematical relations, and have added this to our formula in such a way that an individual expression may be given to each case. This is a variable quantity, as it not only depends upon the ability to use the eyes in working, but upon the opinion of the employer as to the effect of the injury upon the amount of work he may expect to get out of the laborer.

It is well known that we can exactly estimate the visual acuity by the Snellen standard of test letters; that we can measure the visual field by the perimeter; and that we can value the amount of ocular muscle defect.

It has been said that our methods were too complicated for practical use. But the act of vision and its relation to earning is of complicated nature. We cannot make exceedingly simple formulæ without doing damage to nature and to truth. The reasons for our opinions as to the relations between the visual factors and the ability to compete are too many and too long to enter into here. Suffice it to say, that we believe we have established a mathematical formula for the ocular earning ability which agrees very closely with results that have been obtained from examination of a large number of cases, especially those having ocular defects occurring from accidents. This mathematical expression is as simple as the complex act of seeing and of competing in the labor market will allow; and, when helped out by our mathematically exact tables and diagrams, is reduced to a simple example in multiplication that any educated person can readily and quickly calculate. For this portion of the subject, I refer to our work on "Visual Economics" and the various essays which have been published by the authors.

Question 6.—If such a formula may be made, how may we express the amount of damage to the working powers of the individual so that it may be understood by the ordinary jury and used as a basis upon which to adjust claims for damages to vision resulting from accidents to the eyes?

Answer.—This may be done both by expressing the percentage of loss to the earning ability and by calculating its pecuniary effect upon the prospective wages of the workingman.

In dealing with money matters a number of other questions arise.

Question 7.—Can we figure upon the probable duration of working life and consequent remuneration therefor?

Answer.—Yes.

Upon such probabilities have there been established numerous industrial corporations—as the life, fire and accident insurance corporations—which have been so successfully managed from both the philanthropic and pecuniary standpoints.

Question 8.—In the case of an accident involving damage to the earning ability, is not the prospective loss greater to a young man than to an old one, and is not this loss dependent upon the age of the individual as well as the amount of corporal damage?

Answer.—Yes.

But little reflection shows us that an old man may have but a few years more of working life, for the competition of younger men and the natural infirmities of age and death, as well as the reward of rest in old age which comes to successful working or business men, will bring an end to his working life, even though he lives to the Biblical limit. We have, therefore, established an average age at which working life is supposed to cease. Therefore, in our calculations as regards probable pecuniary damage, not only the percentage of loss to the earning ability is calculated, but this is also applied to the probable future earnings of the workingman figured from the date of the accident to the probable termination of his working life.

Question 9.—Can we figure upon the damages to ambition, to treasured hopes and plans?

Answer.—Certainly not. The probabilities of successful achievement are too small. The ambitions of our youths are so varied; thousands of young persons are doing, temporarily, more or less low grades of work, with the expectation of some day getting work of a higher class which may be more remunerative. By far the greater number remain in the same station of life in which they started. There are thousands of young men whose ambition lies between that of the President of the United States to the turnkey of some provincial jail. In our profession, it is the ambition of one man to be one of the foremost surgeons or physicians, while others have to be satisfied with practicing in some obscure village. We can only consider the facts that have existed before the accident and the station of life in which the working man may have been at that time. To this may be added the probable working life and percentage of damage to the earning ability.

Question 10.—If we can establish the foregoing, what would be the legal standing of the subject, and what should be the relation of the probable economic damage to pecuniary compensation for the results of accidents to the eyes?

Answer.—Such expression would not be established as a fact, but would be a matter of expert opinion and be considered as such in law.

We physicians are not only called into court to give evidence as to questions of fact, but also for our opinions upon probabilities. For instance, we may testify that a certain client has become totally blind, or that his visual acuity or visual field has been reduced to a certain amount; such a statement is accepted as a fact; but when we enter into the actual effect or probable result of the diminished vision upon the working or earning ability, there is always the question of personal opinion. If, however, by the acceptance of rules such as we give a certain general opinion may be established, it will be accepted in the courts as the highest and best opinion obtainable, and will be almost as strong a statement as an actual fact, and due weight will be given to it in the instructions to the jury.

We are not living under a paternal government such as obtains in Germany, in France, and even in England, where every working man that may be injured is supposed to receive a certain compensation, depending upon the amount of damage to his earning powers. In America every case is more or less a law unto itself, the damage allowed depending upon precedent, the amount of pain and mental anguish, and upon philanthropic or punitive reasons, as well as upon evidence as to physical damages that may have been sustained. Therefore, even though we may scientifically establish the percentage of economic damage and express it in pecuniary terms, the other factors will no doubt be considered by the courts. We hold, however, that the economic damage should be the basis upon which claims should be allowed, modified by the importance of the other factors.

By reckoning these factors, we think that we can estimate in a manner fair and just to all parties the amount of damage to the earning ability which may have occurred as a result of accidental injuries to the eyes, and that this should be considered the principal factor in the settlement of legal claims.

AMERICAN REFERENCES ON SUBJECT OF VISUAL ECONOMICS.

1. *Magnus and Würdemann.* "Visual Economics with rules for Estimation of the Earning Ability after Injuries to the Eyes," 150 pp., published by C. Porth, 105 Grand Ave., Milwaukee. 1902.

2. *Hansell, Howard F.* Estimation of the Amount of Injury to the Business Capacity of the Individual from Partial or Complete Loss of Vision. Annals of Ophthalmology. 1900.

3. *Würdemann, H. V.* The Ecomic Limitations of the Visual Acuity in Various Trades and Professions. Journal of the American Medical Association. Feb. 8, 1902.

4. *Würdemann, H. V. and Magnus, H.* "The Economic Valuation of Vision." Annals of Ophthalmology. April, 1901.

DISCUSSION.

Dr. Eugene Smith, Detroit.—The point has risen in my mind, and I wish to ask Dr. Würdemann if the loss of one eye always interferes to the extent of 50 per cent. How many of us know of cases and have friends who have gone through life, with an earning ability equal to any, with one eye. I am not finding fault, and I hope all members will get his book, if for no other reason than to protect ourselves from the lawyers. The chief point is that it is so difficult to compute the loss of earning ability where one eye alone is lost or injured. I believe a man's earning ability in almost any profession is equal with one eye as with two. This is simply based upon experience with friends. I have known a good many who have lost one eye during infancy or childhood who have gone through life with better earning capacity than I have had with two good eyes. I would like to see how the doctor gets around that.

Dr. Würdemann (closing). — *Earning* ability is not synonomous with *working* ability. Any of you gentlemen it will affect if your clients know you have only one good eye. They will go to an oculist who has two good eyes. With a working man it is still worse. He is as well and can do about as much work with one eye as with two. His monocular vision is almost as good as binocular vision, and in our formula we do not modify the visual acuity on that account. But if you want to employ a skilled workman for a delicate piece of work, you will give the preference to a workman who has two good eyes. The man with only one good eye is injured in his ability to compete. The German Imperial office used to allow 50 per cent. for one eye. In the lower classes of trade the damage amounts to 18 per cent. after the first year. In the first year, on account of the greater trouble in getting work, etc., it is about 24 per cent. In the higher classes of trade it is 30 per cent. the first year, and 20 per cent. thereafter. To the man losing one eye the damage to his *earning* ability—not his *working* ability—ranges from 18 to 30 per cent.

MEDICAL SOCIETIES.

FIFTY-THIRD MEETING OF THE AMERICAN MEDICAL ASSOCIATION.*

Held at Saratoga Springs, N. Y., June 10 to 13, 1902.

SECTION ON OPHTHALMOLOGY.

(Continued from last issue.)

SECOND SESSION.

THE REMOVAL OF FOREIGN BODIES FROM THE EYE.

O. **HAAB** (Zürich, Switzerland) spoke favorably of the Desmarres capsule forceps, saying that they caused but a slight wound and injured the vitreous as little as possible, but they were only of use when the splinter was free and visible in the vitreous. That we possess valuable aids in the diagnosis of foreign bodies in the X-ray and sideroscope, but they required much skill and patience in their use, and could be almost dispensed with by use of the large magnet. He described in detail the use of the large magnet in the extraction of various foreign bodies from the eye, which with him, in 165 cases, had only failed 23 times, and in these cases the failure was due to the body being too firmly imbedded in the posterior wall of the globe or having pierced it completely; situated in the ciliary body; having produced fibrinous purulent exudate; or had been healed over for months or years. He had never observed any risk in its use, and did not deem it necessary to have three different sizes, as advised by Hirschberg, the large magnet answering for all cases. In this country the large magnet was used almost immediately upon its introduction, and with success.

FOREIGN BODIES IN THE EYE.

WILLIAM M. SWEET (Philadelphia) said the majority of injuries were now due to iron or steel, but occasionally small shot, pieces of copper, glass and coal are the cause. That a small wound of the cornea, with opacity of the lens, is almost positive proof that the foreign body has passed into the interior of the eyeball and been retained; when there is cloudiness of the media, the X-rays are the most accurate means of diagnosis; excellent results have been secured with the sideroscope, but owing to its delicacy it has a limited usefulness. The low power of the Hirschberg magnet necessitates the introduction of its point into the vitreous, and therefore the large magnets are now more generally used. A chart was given showing the attracting power of the different magnets, and demonstrating the superiority of the Haab magnet. If the wound of entrance had closed, it was better to extract through an opening in the sclera. The after treatment should consist of cold, supplemented by atropia.

---

*American Medicine.

A REPORT OF SOME CASES OF FOREIGN BODIES IN THE EYE WHERE HAAB'S MAGNET WAS USED.

MYLES STANDISH (Boston) reported a series of eight cases, in which a long, slender bit of steel was driven through the cornea and lens, and removed without making an incision in the sclera. The undesirability of such an incision is due to the danger to the choroid and retina. In all these cases, by use of the Haab magnet, the body was compelled approximately to retrace the tract by which it entered. The method of procedure was to bring the point of the magnet almost in contact with the cornea, with its axis in a projection of the line of entrance.

Discussion.—**KIPP** (Newark) said the use of the large magnet was indeed a happy thought, and the man who conceived the idea should be held a benefactor of mankind. He related a case in which by reversing the poles of the large magnet he had successfully removed a large piece of iron that could not be turned otherwise.

KNAPP (New York) said the usefulness of the Haab magnet was self-evident, and agreed with Kipp that Haab should be considered a great benefactor to mankind. He referred to the danger of extracting foreign bodies through the sclera, and preferred to bring them out through the original wound of entrance.

WOODRUFF (Joliet) had had 25 cases of injury by steel; located and removed by a large magnet in 22 cases.

Sherman (Cleveland) said the cost of the Haab instrument precluded its use in many instances, and spoke of one he had, made by the Brush Company, which worked very well.

Wiener (St. Louis) spoke of a case in which he had failed to remove body with Haab magnet, and had to make an incision and extract with small magnet. He had had a magnet made after the Haab pattern at a cost of less than $50.

Holt (Portland) preferred to extract through the sclera, and had operated on cases where the eye was in a state of suppuration, and seen the suppuration cease.

Lippincott (Pittsburg) said, in his observation, many patients had reason to be grateful to Professor Haab for having devised the best method for removal of foreign bodies from the eye. He said all the other magnets were really children of Haab's. The best method of diagnosing was by the Röntgen ray, but the difficulties of using it were great.

Ellett (Memphis) reported a case in which the foreign body had passed through the lens without producing cataract, and another where evisceration had to be done.

Risley (Philadelphia) reported a case where, not having a Haab magnet at hand, he had with a Graefe knife made a meridional incision just to the nasal side of the inferior rectus, and placing the tip of a Hirschberg magnet in the small wound withdrawn the body. No reaction whatever.

Woods (Baltimore) reported a case in which the proceeding described by Risley was used, the tip of a Johnson magnet being used; no reaction; discharged; but came back in six weeks with detachment of retina.

Appleby (St. Paul) said one should pay especial attention to the location of the foreign body in these cases, and for that purpose should employ the sideroscope and X-ray.

Greenwood (Boston) reported a case in which a piece of steel was located in about the same position as that spoken of by Risley; removed by incision in sclera; three years later patient has $^{20}/_{15}$, and lens absolutely clear.

Sweet, in closing, said that any body having the power to enter the eye could be located by the X-ray, and showed some very minute bodies that had been located in that way.

Haab, in discussing the remarks, thanked the members for the cases related and the approval of his magnet. He said it was often of advantage in nervous patients to use the magnet from behind. He said the first rule should always be to let alone the vitreous.

PROCEEDINGS OF THE OPHTHALMOLOGICAL SOCIETY OF THE UNITED KINGDOM.*

David Little, M.D., F.R.C.S.E., President, in the Chair.

Thursday, June 12, 1902.

Secondary Carcinoma of the Eye.

Dr. Rockliffe (Hull) read notes of the termination of his case exhibited to the Society in July, 1901. The left eye was excised on July 12th, and the specimen and slide kindly mounted and prepared by Mr. Lister, then pathologist of the Royal London Ophthalmic Hospital, show the cornea healthy, with rather shallow A. C., and the angle narrowed, but not closed; the lens is apparently normal and *in situ;* the vitreous has entirely disappeared. Situated at the posterior part, and extending from the optic nerve to the ciliary processes, was a large, flat, unpigmented tumor (which at the optic nerve appeared to be from about 2 to 3 mm. thick, and gradually tapering in thickness as it advanced forward) forming in the choroid, which in the anterior half appeared to split into two portions, the greatest portion being internal to the growth. The retina was completely detached. Microscopically, the growth was seen to be in the choroid, and consisted of numerous round cells grouped together with connective tissue, which was of small amount compared with the former. Hardly any pigment cells were discernible, except in the anterior half of the choroid, where they lay internal to the new growth, and from which they appeared entirely free. The vessels were very few, and entirely confined to the connective tissue network. The optic nerve had also several tumor cells scattered among the fibres. The sclerotic also at the posterior portion was sparsely infiltrated with the same. There were several areas of degeneration in this growth. July 30th, right eye V. $^6/_{18}$, detachment increased, shooting pain around eyeball. August 10th, under her local medical attendant, Dr. Morison, with an attack of pleurisy, from which she appeared to recover; later she had stiffness, swelling, and pain in her left leg. Under atropine the optic disc was congested, and the whole retina swollen, with increased detachment. The patient died on November 30th, the most troublesome symptom having been vomiting and paroxysms of coughing, and her vision had gradually got worse, but she had little or no pain in her head or eye. She had also continual constipation, and was in a comatose condition the last two days of her life. To sum up, it would appear that secondary carcinoma of the eye more usually followed injury to the breast, affecting females rather than males, between the ages of 40 and 60, and that the tumor was flat, and consequently the tension not increased; and that the duration of life, although varying after the first symptom of the eye becoming affected, usually did not exceed two years.

---

*British Medical Journal.

Mr. Holmes Spicer said he had recently seen a patient whose breast was removed two years and a half ago for scirrhus. She had two separate detachments of the retina, but the tension was not raised. The eye was removed, and a flat growth—a metatastic carcinoma—nowhere more than 3 mm. thick, was seen in the choroid, and quite separate from the retina.

Mr. Hill Griffith thought that the flat appearance of these growths was possibly not peculiar to them; for if sarcomata were seen at an early stage, he thought that they also would be flat.

Mr. Devereux Marshall thought that the disease was probably not so rare as one would imagine. So often it happened that when a patient was in any advanced stage of cancer the fact that the eye showed signs of failure was not taken much notice of, and doubtless many cases were missed in this way. He quite agreed with Mr. Hill Griffith that in very early cases of sarcoma the growth was flat, and he had seen such, but the whole tendency of these metatastic carcinomata in the eyeball was to extend sideways, and not to grow forward like a sarcoma, and in this way the two were never very much alike.

Dr. Rockliffe briefly replied.

LEPROUS ULCER OF CORNEA.

DR. ROCKLIFFE also read notes of a case of leprous ulcer of cornea in a young man, a native of the West Indies. He exhibited prints of skiographs showing the various bone changes taking place in this disease; he also referred to the obstinacy of the corneal ulcer to treatment, in spite of frequent galvano-cauterization, etc.

DEATH FROM ATROPINE POISONING.

DR. ROCKLIFFE also read notes of a case of supposed death from atropine poisoning. The patient was a very delicate-looking child, aged 10 months, who had suffered from convulsions most of this time. He first of all put three drops of a 1 per cent. solution of atropine in the eyes, which did not dilate the pupils fully. More atropine was applied, but during the thirty hours which elapsed from the first using of the atropine only seven drops were used. The temperature rose to 105.6°. The pulse was uncountable, and the respiration 72; the skin was red, and the lips had a quantity of mucus about them. In this state the child died.

BILATERAL CONGENITAL MICROPHTHALMOS.

DR. BRONNER (Bradford) read notes on two families with bilateral congenital microphthalmus and cataract. In one case the father and four out of eight children were affected; these were numbers 3, 5, 6 and 8. The eyes of the mother were normal. There was no consanguinity or history of syphilis. In the other cases the mother and all the four children were similarly affected. The parentage of the children was somewhat uncertain. The mother of the woman was said to have had similar eyes.

DR. ARGYLL ROBERTSON had once operated on a boy with this condition, the father having similar eyes, and having previously undergone a successful operation for the removal of his cataract. In both fair vision resulted.

MR. MULES thought that in such cases there was usually congenital syphilis.

MR. PRIESTLY SMITH said there was no hard-and-fast line to be drawn between the small eye and the microphthalmic one. If the diminished size was very marked, probably the lens was small and opaque; but if the lens was clear and full-sized then glaucoma was almost certain to result. On the whole, he thought that the former variety were less liable to become blind than the latter.

Mr. Frost thought that those having a congenital coloboma were less liable to glaucoma.

Professor Fuchs had seen but one case. In this, a man who had lost an eye from acute blenorrhœa had a child who suffered from microphthalmos on the same side.

Dr. Bronner replied.

COLLOID DEGENERATION OF THE CONJUNCTIVA.

Major H. Herbert, I.M.S., described a case of what had been wrongly named "amyloid" or "hyalin" degeneration. Similar changes had been found rarely in the skin of old people, and had been correctly described by dermatologists as "colloid" degeneration. The ocular conjunctivæ only were affected, the palpebral portions being occupied by scar tissue from old trachoma; a swollen translucent fold overhung the upper third of each cornea. The change consisted mainly in a swelling and breaking up and rearrangement of white connective tissue fibres (collagen) and also of elastic fibres. In the deeper tissues the new material became molded into rounded and elliptical blocks, probably by constant stretching and movements of the fold. In the centre of many of these blocks plasma cells were enclosed, more rarely smaller masses of colloid or blood pigment. Other blocks with central cavities represented the remains of blood vessels. On the other hand, other blood vessels had undergone rarefaction of their walls, instead of colloid thickening and occlusion. Many of the blocks had connective tissue cells closely applied to them. Special staining with acid fuchsin and acid orcein showed imbedded in many of the blocks the remains of white connective tissue fibres, and in others elastic fibres. But the change was so advanced in the tissue examined that it was only close beneath the epithelium, in a layer of adenoid tissue, that the transition from collagen to colloid could be followed. In this layer a few true hyalin balls were to be found; and both here and in the deeper tissues were many golden pigment granules, the remains of hæmorrhages. Here and there some of the deeper colloid had coalesced into large and rather firm opaque waxy masses, 2 or 3 mm. or more in diameter. In the central portions of these masses there were no blood vessels, and only the remains of cells, consisting of groups of small particles and larger spheres with some affinity for hæmatoxylin. There were still a few bands of white connective tissue remaining, but they were degenerating on lines rather apart from the primary colloid change; also some free elastic fibres, mostly clumped near blood vessels. Some of the latter showed basophile degeneration—elacin. The only approach to amyloid reaction found was a faint indigo blue with iodine and sulphuric acid in a few of the blocks; all alike stained pale brown with iodine alone, and none of them gave any trace of pink with methyl and gentian violet.

CARD SPECIMENS.

The following were shown: Major M. T. Yarr: Indirect Contusion Injuries of the Left Eye, Resulting in Blindness, Following a Mauser Bullet Wound of Both Superior Maxillary Regions. Mr. J. H. Parsons: Sections of a Case of Microphthalmos. Dr. Leslie Buchanan: Traumatic Separation of the Ciliary Body from the Sclera. Mr. Stephen Mayon: (1) Rodent Ulcer of the Face Treated by X-rays; (2) Case of Trachoma Treated by X-rays. Mr. Arnold Lawson: Partial Embolism of the Central Artery of the Retina in a Lad Aged 18. Mr. Holmes Spicer: (1) Thrombosis of Retinal Veins, with Cystic Degeneration of the Retina and Yellow Spot; (2) Vessels of New Formation on Anterior Surface of Iris.

MOLLUSCUM CONTAGIOSUM.

Charles J. White and M. J. Robey, Jr., (*Journal of Medical Research*, April), from a careful study of several hundred sections of as many different tumors, and from a study of the literature of the subject, conclude that the change is not a colloid or hyaline degeneration, but rather an extraordinary metamorphosis of rete cells into keratin. No one has ever demonstrated a parasitic body in the growth.

ABSTRACTS FROM MEDICAL LITERATURE.

BY W. A. SHOEMAKER, M.D.
ST. LOUIS, MO.

ATROPHY OF THE OPTIC NERVE AND ITS TREATMENT BY THE SUBCUTANEOUS INJECTIONS OF STRYCHNIÆ.

Hasket Derby *(Boston Medical and Surgical Journal*, May 15) gives his experience in the treatment of optic nerve atrophy by injections of strychnia in increasing doses. Results were encouraging in about 30 per cent. The author's conclusions are as follows:

1. Strychnia is a stimulant to the optic nerve. Even in normal eyes it slightly increases the acuteness of vision and widens the visual field. These effects are temporary (Fuchs).

2. In certain cases of optic nerve atrophy its local subcutaneous injection has, to say the least, coincided with an arrest in the progress of the disease, and has been followed by a somewhat increased acuteness of vision. Whether these effects are temporary or permanent, time and fuller statistics will show.

3. In a progressive case of this disease it is clearly our duty to state the above facts to the patient, and allow him to take the treatment if he is so inclined.

4. The strychnia should always be administered in the temple, and by subcutaneous injection.

A NOTE ON ADRENALIN.

Ch. Amat (*Bulletin General de Theraputique*, June 23) thinks that adrenalin is the most powerful vaso-constrictor known. It is a powerful hæmostatic, acting properly, and its effects lasting from twenty minutes to four hours. It rapidly relieves pain in all forms of keratitis, and even in glaucoma, where it reduces the ocular tension, thus lessening the danger of hæmorrhage after an iridectomy. It will reduce the swelling of the lachrymal canals, and allow the passage of a liquid, thus avoiding the necessity of using a sound. Amat thinks it is as valuable a therapeutic agent as cocaine.

THE AMERICAN JOURNAL
OF
OPHTHALMOLOGY.

VOL. XIX. SEPTEMBER, 1902. No. 9.

ORIGINAL ARTICLES.

THE PRESENT STATE OF OUR KNOWLEDGE CONCERNING SO-CALLED PARTIAL OR GRADUATED TENOTOMIES AND THE HETEROPHORIAS.*

BY DR. J. E. COLBURN,
CHICAGO, ILL.

(*Abstract.*)

THE literature of the subject is extensive and the reports of cases and results of operations too voluminous to even give a brief outline of the most important work. The author gave his conclusions after reviewing the subject.

A small group of men, some of them with extensive experience, condemn the operation as needless, harmful and unsurgical. Another group, and still a smaller one, consider it the only cure for heterophoria.

A large group of men of most conservative habits of thought, voice the following conclusions:

1st. No person should have a tenotomy performed solely because he is the subject of heterophoria.

2d. Very slight degrees should be corrected where troublesome symptoms exist which may be due to the too great use of nervous force on co-ordinating the eyes.

---

*Read at the meeting of the Western Ophthalmologic and Oto-Laryngologic Association, held in Chicago, April 10, 11 and 12, 1902.

3d. Other means should be resorted to before trying tenotomy, but *unnecessary delay should be avoided.*

4th. Tenotomies should be performed under cocaine.

5th. In judiciously selected cases, when the operation is properly performed, the average results will be quite as satisfactory as the results of most other surgical operations.

It is a mistake to deny that any good can come of a graduated tenotomy. It is always a mistake to claim that all of the ills that flesh is heir to are to be cured by cutting the muscles of the eye.

Others ignore the subject entirely, professing to know nothing about it, and consider it as unimportant.

Dr. Colburn's opinion is that graduated tenotomy can be done so as to correct a true heterophoria without in any way interfering with the range or the nicety of adjustment of the eye, but rather to correct its error and produce orthophoria. The opponents of the operation give no valid reasons why it should not be performed. The uncertainty of the results of prism drill or ocular gymnastics, the loss of time and the danger from relapse render the physical culture treatment, in cases of true heterophoria, unreliable. Correction with prisms may answer the purpose in certain cases, but the error must be of low degree, and unless the patient has an error of refraction, this necessitates the use of glasses which otherwise may not be required.

DIPHTHERIA OF THE CONJUNCTIVA TREATED BY ANTITOXIN.

L. Emmett Holt (*Medical Record*, May 31) found diphtheritic conjunctivitis in a child six months old, and administered 2400 units of antitoxin. A solution of atropine was dropped into the eye and cold compresses applied. In twenty-four hours the temperature had fallen from 102° to 100.8°, and in forty-eight hours to normal. In twenty-four hours a decided change for the better was seen in the eye. On the third day the swelling had diminished sufficiently to enable the child to open its eye, and the membrane was nearly gone. By the sixth day it had disappeared entirely. The diphtheria bacilli were found by cultures as late as the seventh day, and on the tenth day the eye was entirely well.

SECTION AND EXSECTION OF THE RECTUS MUSCLES FOR COSMETIC EFFECT IN CASES OF SQUINT INOPERABLE BY TENOTOMY AND ADVANCEMENT.*

BY A. E. PRINCE, M.D.,

SPRINGFIELD, ILL.

IT fell to my lot, about eighteen years ago, to meet a case of divergent squint, due to a faulty operation. An itinerary surgeon, in place of dividing the tendons of the recti interni for an internal squint, had divided the muscles back of the perforation through the capsule of Tenon. Before that time I had made some efforts at advancement in similar cases, without satisfactory results; and in this particular case, I determined upon a procedure which has stood the test of experience for a decade and a half, and which I venture to recall to your minds to-day, in the hope that it may receive a candid criticism of its merits.

I say recall to your minds, because I read an account of the procedure at the meeting of the American Medical Association at Cincinnati, Ohio, in 1888, and some of the matter of this paper may be found in the *Journal of the American Medical Association* of the date of October 13th of the same year.

I am encouraged to bring it to the notice of the profession again by the belief that it failed to become a part of the living knowledge of ophthalmology, not for any demerit it possessed, but because it failed to receive sufficient attention at the time to lead operators to test its value.

That oculists are not alive to the usefulness of the procedure is impressed on me occasionally by the presentation of cases who have been seen by competent oculists, who have failed to offer any plan of relieving the embarrassment and mortification due to the cosmetic defect of paralytic squint.

The following is a case in point: On Nov. 4, 1898, Mr. Skinner of Peru, Ind., called on me with what he considered a hideous deformity due to a paralysis of the internal rectus of the left eye. He was and is a ticket agent in the employ of the Wabash R. R., and is obliged by the nature of his business to stand at the window and meet the gaze of thousands of ticket purchasers.

---

*Read at the meeting of the Western Ophthalmologic and Oto-Laryngologic Association, held at Chicago, April 10, 11 and 12, 1902.

He had had two operations performed to correct it, by able oculists, and, upon consulting a third, received the candid answer that "it was among the impossible things," since the internal rectus was absolutely paralyzed, and the external rectus was contracted in the orbit. There being no possibility of establishing an opposing force, the eye must retain the condition of maximum, motionless abduction.

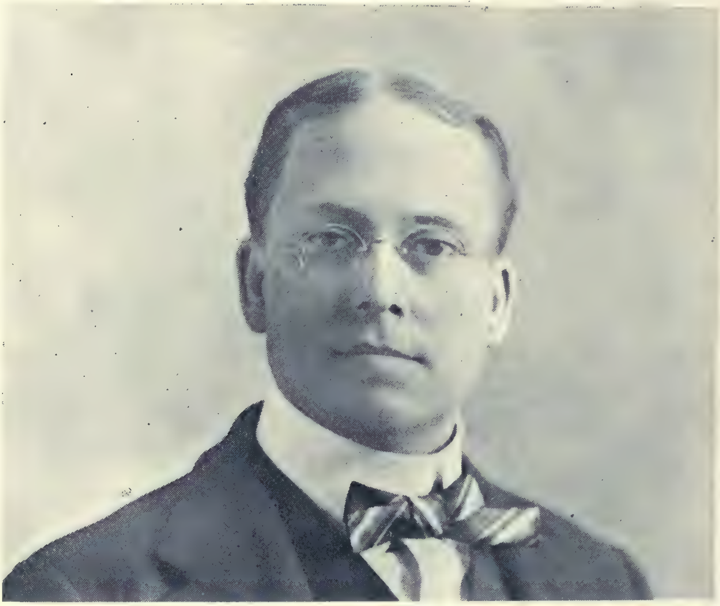


FIG. 1.

His desperation and consciousness of his deformity increased until he consulted me, with the purpose of having the eye removed and a glass eye substituted. When I told him that his eye could be straightened by the simple procedure of paralyzing the opposing muscle, he was incredulous; but the result of the operation made him almost ecstatic, and he continued to thank me from time to time for the cosmetic result, which is shown by the accompanying recent photograph. (See Fig. 1).

The case of a nurse at Pontiac, Ill., Miss B., is another example which I might advance as an excuse for introducing this subject to the profession a second time.

She had had a faulty tenotomy, or rather myotomy, in former years, which had led to a life of mortification. She had seen a number of oculists, who had invariably discouraged her from having anything done.

Upon being consulted, I unhesitatingly told her she had certainly come to the right place, for, so far as I knew, no one but myself was correcting such deformities as hers. If I was wrong, I will offer an apology. She submitted to an exsection of the external rectus back of the equator of the eyeball, and when she left the hospital, six days later, nothing so well expresses her gratification as a remark of one of the patients, who said: "She is as happy as a shouting Methodist."

The purposes for which this operation may be performed are four in number:

1. Permanent atrophy or paralysis.

2. Irrecoverable loss of either rectus through accidental section of the muscle back of its capsular perforation.

3. Extreme over-correction of long standing, following tenotomy with excessive laceration of the capsule, permitting the retraction of the tendon back of the equatorial meridian, whence, owing to atrophy or adhesions, it cannot be successfully advanced.

4. Irrecoverable traumatic dislocation of the rectus.

Cases belonging to the paralytic class are not very infrequent. The class of accidental section of the muscle in place of the tendon (formerly very large, before the relations of the capsule were understood) is assuming diminished proportion, and new cases are seldom produced except by the most inexperienced charlatan.

The third class is becoming smaller in proportion to the attention paid to the preliminary correction of ametropia, and the frequency with which advancement is employed in the correction of high degree of squint.

In the fourth class my knowledge is limited to the observation of Case 7.

The clinical aspect of these conditions needs no particular consideration. The unpleasant appearance of an extreme deviation, especially when outward or upward, and accompanied by restricted motion, is too familiar to be mistaken. The exceptional reference, if any, to be found in the literature of treatment, and the acknowledged inefficiency of tenotomies and advancements in correcting these deformities, justify the brief outline of the following cases, which have led to the adoption of the present mode of practice:

Case I.—One of the series of unsatisfactory results following attempts to correct a paralytic condition by advancement.

Mrs. D., aged 45. In childhood both interni had been tenotomized in an unknown manner, resulting in a moderate over-correction, which later in life became a divergence of both eyes, measuring together 70 degrees. The interni were so inefficient that the axes of neither eye could be brought parallel to the meridian plane. Lateral motion was restricted to 30 deg. in the right and 25 deg. in the left eye. The operation performed was a tenotomy of the externi with advancement of the retracted internal recti. Each internus was found attached to the posterior hemisphere of the ball. The advancement was accomplished in a satisfactory manner, and the result was a temporary success. Soon after her discharge a slight divergence (10 deg.) was observed, but in contrast with the gravity of the former condition was not regarded as a bad failure. For three months the divergence increased, until it would have been difficult without actual measurement to determine any material improvement.

This failure is introduced as a type of the results which will attend the attempts to restore the equilibrium through advancing a muscle which has remained for many years retracted in the orbit, becoming atrophic through inactivity. The superior strength of the opposing muscle, though tenotomized, will assert its supremacy, and the correction will not be permanent.

Case II.—Section of both recti, posterior to their capsular perforation.

Barney Burns, Sidney, Ill., aged 43. From infancy to the age of twenty years, he was the subject of a marked internal squint. At that time his father entertained a guest over night, who made it his business to travel the country and straighten cross-eyes. It was considered a rare fortune thus accidentally to have presented an opportunity which might never occur again, for they were very poor, and he was willing to straighten both eyes for his lodging and two dollars and a half. A week later, when Dr. Strabotomist was pursuing his calling many miles away, it was considered safe to expose the eyes to the light, when the following condition was revealed:

Both eyes were deviated extremely outward, measuring with Snellen and Landolt's method, 50 degrees in the right eye, of which a portion of the iris was concealed under the external canthus and the lateral motion limited to 10 degrees. With H=1. 5 D. corrected, $V={}^{20}/_{20}$. In the case of the left eye external deviation was 40 degrees, lateral motion 15 degrees, H=1. 5 D., $V={}^{20}/_{40}$. Direct vision was very imperfect, but by turning the head to bring objects into the visual axis of either eye he could see tolerably well. As he was very anxious to have an effort made for the correction of his deformity, and bearing in mind my experience with advancement in this class of cases, it was explained to him that his muscles had been divided too far back, to correct which as bad an operation would be attempted on the external muscles as his two-dollar-and-a-half operation had been on the internal muscles, and that it was hoped by the aid of a stitch to be able to effect a parallelism, so that he would look well and have direct vision, but he must not expect to have lateral motion, for, with the lateral attachment of both eyes destroyed, he must be satisfied if they were simply straight. With this understanding the operation was undertaken. A lateral incision was made above each external rectus, and the hook introduced far back, exposing the muscle, which was divided outside the capsule. An internal advancement suture, to avoid subsequent deviation, was placed in each eye. The after-treatment consisted of a moist compress of carbolic acid, one-half per cent. No pain followed the operation. On the fourth day there was an inward deviation of 5 degrees, which was not noticeable. No deviation has occurred in the interval of seven years which have elapsed.

The most gratifying and at the same time surprising fact, especially worthy of note, was the unpredicted amount of lateral motion, which in the right eye amounted to 40 degrees, and in the left eye to 45 degrees. To account for this unexpected success, the theoretic explanation is advanced that both external and internal recti formed a union with the posterior hemisphere of the capsule, for it is scarcely probable that so great an amplitude of motion could be accomplished by the recti muscles acting alone on the orbital cellular tissue. Another consideration (concerning which, it must be confessed, some apprehension was entertained) was the danger of exophthalmus, consequent on destroying the ocular attachments of the two opposite recti muscles. The entire absence of this effect is likewise regarded worthy of note.

Case III.—Complete paralysis of the sixth nerve, treated by exsection of the rectus muscle.

Mr. T. A. D., Oneida, New York, aged about thirty years, presented himself at the College of Physicians and Surgeons, New York, with a condition of complete paralysis of the external rectus of the left eye, following a railroad accident twelve years since. In the collision his head was jammed between two cars. The recovery from the injury was rapid, leaving no other effects than an extreme internal deviation with partial concealment of the iris. Some years after an unsuccessful operation was performed. Tested at the College and also at the Manhattan Eye and Ear Infirmary: V=counts fingers at six inches, internal deviation about fifty degrees, absolutely no motion.

Being in the city, by the courtesy of Dr. Webster I was extended an invitation to demonstrate my method of advancement on the following day at the Manhattan Eye and Ear Infirmary. Judging from the amount of motion obtained in the case related above, it was thought that a simple section of the muscle back of the capsule would be insufficient; that an attachment to the posterior hemisphere would probably occur and reproduce a partial internal deviation. It was therefore determined to exsect the muscle as far back as possible, the intention being to destroy the efficiency of the internal rectus. Under the influence of cocaine, the globe was rotated with fixation forceps as far to the temporal side as the contracted and hypertrophied muscle would permit, in order to allow of the introduction of the hook. Parallel lateral incisions were made, liberating the muscle, which was drawn out by the continued traction of the hook and divided at the remotest accessible point. The anterior portion was then separated from the sclera. An external advancement suture was inserted to hold the eye in position, and it was kept moist with a saturated solution of boric acid. No especial reaction followed the operation.

The stitches were removed on the fourth day. The eye was cosmetically straight. No exophthalmus or unnatural appearance existed except the absence of lateral motion. He left the hospital satisfied, with still some little ecchymosis, rapidly absorbing.

CASE IV.—Exsection of the anterior portion of the externus for the correction of a paralytic divergence following faulty operation for internal strabismus forty-four years ago.

Mrs. H., Carrollton, Ill., aged fifty-three. At nine years of age had an operation for the correction of convergent strabismus, resulting in an extreme over-correction of the left eye only. The angle of the deviation was forty-five degrees, and the lateral motion did not exceed ten degrees.

The staring effect of the divergence, combined with the loss of motion, was a constant source of embarrassment. She was especially anxious to have the deformity corrected, since in the capacity of the wife of a Methodist minister she frequently changed her abode and made new acquaintances.

With an understanding that parallelism, with but partial restoration of motion, was all that could be certainly secured, it was determined to advance the internus if possible, to exsect a portion of the externus if necessary.

Under cocaine an incision over the internus was made and forceps introduced to secure the retracted muscle, which was found but could not be satisfactorily advanced owing to the cicatrization and long-standing contraction of forty-four years. A suture was introduced to be subsequently employed to overcome the divergence. The tendon of the externus secured by fixation forceps was then separated from the sclera and freed from its capsular attachment by four incisions parallel to its course. Thus permitted to assume its meridian plane, it was brought into and secured in this position by the suture previously placed in the contracted internus. Lastly the anterior contused end of the externus, thus far held by the forceps, was removed, allowing the muscle to retract into the orbit. The stitches were removed on the fourth day, when she went to her home, from which she has written expressions of satisfaction with the result. Motion is very good, and I regret not being able to give it in degrees. No exophthalmus exists.

Case V.—Exactly similar to the preceding. Mrs. S., Springfield, Ill., aged fifty-four years. Operated for internal squint at ten years of age. Slight divergence of left eye at first, became more marked as she grew older, partly owing to the relinquishment of her accommodation (H = plus 2.50 D.) She gradually lost control of the lateral motion, which was reduced to five degrees, and finally consulted me concerning pain, which was assumed to be due to the permanent contraction of the externus.

The foregoing considerations led to the adoption of the method of treatment employed in the previous case, with similar results, except that the lateral motion obtained was more limited, not exceeding twenty degrees. The eye appears straight during direct vision, pain has disappeared and she has been enabled to do an indefinite amount of sewing without discomfort. No especial increased prominence of the eye is observed.

Case VI.—Similar to the two previous. M. K., Kansas. Mr. K. is a German Lutheran preacher. He states that the extreme divergence of the right eye resulted soon after an operation for internal squint. This occurred in childhood while he was still in Germany.

One operation for the correction of his deformity had failed, but he was sufficiently intelligent to appreciate the method suggested, of first accomplishing what was possible by an advancement and then weakening the externus sufficiently to restore a balance of the opposing forces.

The mechanical procedure was a repetition of the foregoing, and the result satisfactory to the patient. The lateral excursion amounted to thirty-five degrees. There was no apparent exophthalmus.

Case VII.—Dislocation of the inferior rectus, and divergent strabismus, twenty-five degrees, following injury; treated by exsection of the superior, tenotomy of the external and advancement of the internal recti.

Mr. J. P., Camden, Ill., aged thirty years. Fourteen years ago, while walking under a tree, he was struck in the right eye by a broken branch, causing him to fall to the ground. For three hours he suffered pain and nausea. The eye was dressed by Dr. Mead of Huntsville, who removed some pieces of bark, after which the swelling was too great to permit inspection for eight days. At that time the eye was found deviated upward, carrying the upper lid with it. There was no power of downward rotation. The eye deviated also outward, but the lateral motion was good. He reports the condition to have suffered no change since the injury. The external deviation is found twenty-five degrees, and the upward deviation thirty degrees and paralytic. The maximum of lateral motion not noted.

The eye appears slightly exophthalmic. The upper lid would descend by a voluntary effort, but in the condition of rest it was elevated, making the vertical diameter of the palpebral fissure one-half greater than that of the fellow eye.

By an effort at closing the lid, slight downward motion of the ball was effected. The permanent upward rotation of the eye subjected the inferior portion of the cornea and adjacent sclera to continued exposure, causing it to be always congested, and at times badly inflamed, preventing sleep. No epiphora existed.

Operation.—The correction of this rare deformity was planned as two operations. The first, to restore a balance of muscular efficiency in the vertical plane. The second, to correct the external deviation in the horizontal plane.

Under the influence of cocaine, an incision was made over the location of the inferior rectus. By the grasp of the forceps muscular action was observed, but owing to the extensive long-standing cicatrization no effective advancement could be made. An inferior advancement stitch was introduced, and an attachment made to the sclera. The next step was to weaken the superior rectus sufficiently to permit the enfeebled inferior successfully to oppose the force of its antagonist. Accordingly, its tendon was detached from the sclerotic and secured by forceps. The effect not being sufficient, the muscle was liberated from its capsular attachment by incision parallel to its course. It was thus rendered possible, by means of the inferior advancement suture, to secure a parallelism in the horizontal plane. *The superior rectus was then shortened and allowed to retract back of the equatorial meridian of the eye*, that it might not overbalance the strength of the dislocated inferior rectus. The immediate result was good. Some vertical motion was restored. The lids closed naturally, covering the ball.

Three days later the patient reported slight pain since the operation. Conjunctiva much congested. Vertical motion thirty degrees. Amount of exophthalmus unchanged, but less conspicuous, owing to the closure of the lids over the sclera.

April 20th, 1888, two months later. Returned for the correction of the external strabismus, which still remains twenty-five degrees. At this time there were five degrees of superior deviation. Vertical motion measured thirty degrees.

The external deviation was corrected by a tenotomy of the externus, with an advancement of the internus.

Operation.—The amount of muscle to be excised must be determined by the operation in each individual case. In complete paralysis complete exsection will be required.

In all cases of partially atrophied muscles contracted in the orbit, some muscle should be left to oppose its remaining available efficiency. Common sense and good judgment will be required in making a correct estimate of the needs of the patient.

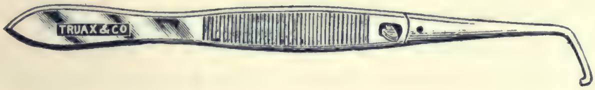
The eye should be held in position by an advancement suture when indicated. The operation I invariably use is the single suture operation, described in the *Ophthalmic Review*, September, 1887, and subsequently in the *Archives of Ophthalmology*, October, 1893. The interest which is taken in the operation (which is a necessary part of the operation in question in many cases of partial paralysis or over-correction) leads me to make the following extract from the *Archives of Ophthalmology* of the above date:

" *Materials.*—Not finding a satisfactory forceps in the market, Tiemann has filled this want for me.

"The introduction of a suture into the episcleral tissue is facilitated by a very slender, sharp, curved needle, with a comparatively large eye, designated by Tiemann as No. 25. Each will exercise his choice relative to a fixation forceps, but preference is given to that of Critchett, because, having two fine guarded points, the sclera is fixed directly without traction on the yielding conjunctiva. The suture preferred is fine, strong, black, iron-dyed silk, such as is furnished by Tiemann, and designated No. 3.

"*Operation.*—A conjunctival incision is made over and parallel to the attachment of the tendon of the muscle to be advanced. The tendon is secured by an advancement forceps, separated from the sclera and advanced, allowing the conjunctiva to retract.

"A slender eye needle, half-curved (Tiemann No. 25) is passed from without forward, perforating the conjunctiva, muscle and capsule. It is then made to pass outward in the reverse order, from which it can neither slip nor escape.



"The sclera now being fixed, preferably with Critchett's short fixation forceps (Weiss), an unyielding anchorage, in the form of a fibrous pulley, is secured in line with the rectus by introducing the needle into the dense episcleral tissue 2 mm. from the sclero-corneal junction.

"Both ends of the suture are now brought together, forming the first portion of a surgical knot, and tightened to effect a slight over-correction. This may now be secured or provisionally held by the application of a bow-knot until the muscular tonicity shall have returned, thus enabling the effect to be modified at any time before adhesion has taken place. This suture is permitted to remain four days, unless it is desired to diminish the effect, which may safely be done after forty-eight hours, by removing the suture and opening the wound with a small strabismus hook."

The indications for a tenotomy of the opposing rectus are the same as those which constitute the guide in other operations for advancement.

Conclusions.—The conclusions suggested by the above cases are:

1. In the case of complete internal paralysis of either rectus, the exsection of the opposing muscle will enable the eye to be retained in the straight position without motion in that meridian.

2. In a case of retraction of either rectus muscle into the orbit, under conditions rendering its advancement impossible, an equalization of the deviating power is to be obtained through section of its antagonist, posterior to its capsular attachment, following which, excursions in that meridian will be restored to an extent varying between twenty and fifty degrees.

3. In case of paralysis or retraction of either rectus, the operation of section or exsection of its antagonist has not been observed to develop or increase any pre-existing exophthalmus to any marked degree.

DISCUSSION.

Dr. Reynolds, Louisville.—I believe I did the first tenotomy for the relief of cyclophoria ever done. The account is published in the *American Practitioner* for November, 1873. I think that is the first one done. It was an exceptional case. Have never had just such another one. Cyclophoria to a slight degree is constantly found, but, in my experience, I have seen no other case that seemed to demand operative interference; and when I heard of the axis of the cylinder being set at 10 degrees, or 70 degrees, or 100 degrees, I have in my mind at once the supposition that the apparent cyclophoria might readily be overcome by an attempt to have the patient see through cylinders set at 90 degrees or 180 degrees. That the graduated tenotomy has a limited field of application we are all prepared to admit, but for nearly twenty years I have been practicing an operation that has not been published, I think, of shortening the capsule over the tendon of the weak muscle instead of over the stronger one. We cut out an elliptical portion of the capsule directly over the insertion of the tendon, and I fancy I am able to correct 10 degrees of lateral deviation, either outward or inward by this operation. Shortening of the capsule stimulates the weak muscle, and it is given less work to do while being stimulated, and the opposing muscle does not overcome it in a great many instances. I have had a few failures, but they are exceptional where 10 degrees of outward or inward deviation exists. Instead of cutting the tendon of the strong muscle, I strengthen the tendon of the weak muscle, and introduce two or three sutures. I never think of prescribing the cylinder set at 80 or 100 degrees, but I set it up to 90 degrees at once, and in a moment the patient is able to see satisfactorily. I had the same condition myself for a number of years, with axis at 80 degrees, but I found no comfort till I had the cylinders placed at 90 degrees.

Dr. Jackson, Denver.—It seems to me that Dr. Prince's paper is one of practical importance. There are a certain number of these cases that have been going from one to another without getting relief, and, with the rare experience he has had, I think it would be interesting to know his exact results. I want to mention that class of cases which has complete paralysis of the muscle. I have seen two or three, and if I see another will try his method. I mean the cases of complete ocular paralysis following periodical paralysis. Several years ago I enucleated an eye that had some light perception still, but was displaced several mm. forward and was displaced outward until the cornea was habitually behind the outer canthus. I do not see why such a condition could not be prevented by an exsection of the external rectus, possibly with some interference with the superior oblique, as they act in very much the same direction. I think it is justifiable to mention this, so that anyone who meets an extreme case should think of it and try it. Possibly the superior oblique can be transplanted. We are getting some experience in this mode of transplantation. Possibly it can be so attached to the eye-ball that it will have some influence in opposing the outward movement. It would require that the muscle be displaced back some little distance. I think it would be possible to so attach the muscle to the eye-ball that it would oppose the external rectus.

Dr. Hotz, Chicago.—I fully agree with you this is not an easy subject. We all know that. The more we study the question of heterophoria and the legitimate way of relieving it, the more we feel we are getting into deep water. One difficulty I am reminded of by the remarks of Dr. Reynolds about the weak and strong muscles. The difficulty is often to decide which is the weak. The strong is usually shown by the capability of the muscles to overcome prisms. If there is esophora, that means an adducted position of the eye ball, the external rectus has to expend a good deal of its power to turn the eye straight before it can turn it to divergence. I confess that in the majority of cases I am at a loss to understand whether we have to deal with a muscle too strong or one too weak. There are cases which at the distance show a slight degree of esophoria—4 to 6 degrees—and at the reading distance this is decidedly increased. I have seen such cases up to 16 degrees. I think we are safe regarding a case as one of abnormal tension of the internal rectus and can safely perform the graduated tenotomy on that muscle. As a rule I hesitate to weaken the internal rectus. I am glad to see the rather conservative position Dr. Coleburn took because that is working in the right direction. I have seen a great many cases of esophoria in which the correction of the refraction does not change the esophoria. I know that many times hypermetropia causes an apparent esophoria which disappears totally or partly after the correction of the hypermetropia. I have seen cases where glasses relieved the cause, showing that the esophoria played no role in the disturbance. We are much at sea to determine the truth in all these muscular disturbances. It is very well to say that general principles rule these troubles and that we can help them by improving and building up the nervous system. But the patients do not want to be treated on theoretic principles. They want relief, and if you operate on their muscles and they do not get relief in a reasonable time they do not thank you for it and the work does not add to your credit.

Dr. Bulson, Ft. Wayne.—I should be very glad if this subject were placed on a rational basis. I believe many have been led astray by the theories of men who have become famous as exponents of this method of operating. Personally I have seen some disastrous results following graduated tenotomy. I know a young man who had six graduated tenotomies made in New York City, and he is worse than before he was operated upon. Some of my friends have reported similar experiences. I believe we should make long and painstaking observations under a cycloplegic and in many instances we can thus obviate the discomforts arising from graduated tenotomies. I have had but little faith in them at any time. I have seen so many good results following a careful correction by glasses, and by that I mean a prolonged examination, looking for the minutest errors and correcting them, that I have grown to look upon graduated tenotomies when this had not been carried out, as unnecessary. I am somewhat in favor of the operation spoken of by Dr. Reynolds, and which Fox has mentioned, taking out an elliptical portion of the capsule and stitching it. I believe it can be used, in the manner directed by Dr. Reynolds, with a great deal of success, particularly in that class of cases which have a moderate amount of error. Fox uses it in the correction of divergent strabismus, performing a tenotomy of the external rectus and at the same time an exsection of the capsule over the internal rectus. In well selected cases this will answer a suitable purpose I believe. I doubt if we have too strong a muscle in the cases, in which there is a practical parallelism of the eyes. It is more rational to strengthen the opposing muscle than to cripple one which is apparently too strong.

Dr. Suker, Chicago.—In reference to Dr. Coleburn's paper, I am inclined to fully believe what Dr. Bulson has said and I agree with him in this particular. In all of these conditions of esophoria, exophoria, hypo- and hyperphoria we lose sight of the personal ego, that is to say, the general muscular tone of the patient in reference to the power of accommodation and convergence. I thoroughly believe that the majority of these cases can be cured, provided the absolute refraction is taken under complete mydriasis and thorough cycloplegia. I continue, if necessary, the use of the cycloplegic for weeks, in order to get the true status of refraction, for I do not believe that any interference in a surgical way should be undertaken upon any extra-ocular muscle for any condition of imbalance whatsoever, unless the true refraction has been ascertained and the proper glasses have been prescribed and worn. In only the very exceptional cases might a partial tenotomy be indicated. In reference to the insertions of the tendons as outlined by Dr. Coleburn in his admirable text-book and often mentioned before local societies here, I would like to take an exception. If what he says, that all the extra-ocular muscles are inserted, as it were, by a common sheath into the sclera—in other words, attached to a circular insertion, then a partial tenotomy would violate one of the physical principles, i. e., action and reaction in opposite directions are equal; hence the partial snipping of a tendon or muscle would lose its effect because its influence would be disemminated, which would not be the case had each muscle a separate insertion. In all my dissections, which now number over 200, in this very particular, I have never been able to demonstrate this common insertion of tendons, as outlined by Dr. Coleburn. I grant you, any inflammatory reaction in the capsule of Tenon or the tissues immediately surrounding the muscles might so bind them down or agglutinate the parts so as to make it appear as one tissue. But this is a pathological lesion and not a normal condition. Hence, it cannot be a point to be taken into account in endeavoring to establish a surgical procedure. Each extra-ocular muscle no doubt does spread fan-like at its point of insertion, yet never is this spreading so great as that the extreme fibres of the tendon will come in contact with the tendon of any other muscle in the same plane. As before said, if you take into consideration the normal power of the muscles in relation to the demand made upon the power of accommodation and convergency, in such cases where an esophoria or exophoria, or any other kind of an heterophoria obtains, then the wearing of the properly adjusted glasses will alleviate the trouble. This is so, because the symptoms in these cases are made manifest for the reason that the nerve stimulus first gives out before the muscular stimulus is exhausted. In other words, in any case of exhaustion or tiring, the nerve first gives out and then the muscle. Hence, if you institute in these cases a tonic course of treatment with ocular gymnastics in addition to the proper glasses, you will achieve a cure in the great majority of cases, and leave a partial tenotomy only for the exception, which, indeed, is very rare.

Dr. J. A. Bradfield, La Crosse, Wis.—I think we have allowed our discussion to wander into the subject of heterophoria rather than keep to Dr. Coleburn's paper. I agree with Dr. Suker regarding the attachments of the tendons to the eyeball, and in taking this view that a partial tenotomy of a tendon will produce no positive effect by the subsequent cicatricial contractions. The tendons, however, are very closely connected with the capsule of Tenon, and this connection should always be considered in a tenotomy, and in no case, excepting perhaps of the antagonizing muscle, should this connection be utterly severed. When a tenotomy is made of the tendon and on one side of the connection to the capsule, whether it is advanced or allowed to retract, the relation of the muscle to the eyeball is changed, and not only the optical axis is changed but a tortion or cyclophoria is produced.

Dr. Prince, Springfield, Ill.—I want to call attention to the importance of being very sure in making an exsection to correct paralysis of the opposing muscle that your case is one of permanent and irrecoverable paralysis. If you have this, my experience leads me to believe that you will be absolutely satisfied that you have done the patient a great deal of good by making the complete exsection. If it is only a partial paralysis which is associated with a large degree of abduction or aduction, the partially paralyzed muscle may have some force left and thus give an over-correction. I have had one case where, after making an exsection and getting temporary satisfactory results, the patient's paralysis recovered, showing my diagnosis was not correct as to the eye being permanently paralyzed, and that gave me an over-correction on the other side, necessitating exsection of both muscles. My reputation did not suffer particularly, because in the first place we had a paralyzed muscle and corrected it, and in the second I had a paralyzed muscle of my own production. I do not think there is much in the subject to make one hesitate at it; the technique is not appalling. I have never had a case of exophthalmus following the operation. When from paralysis the eye rotates in one direction and neither muscle has much effect in holding the eyeball in the socket, it does not prolapse any more than before the operation. In no case is the exophthalmus increased. If you will do this you will gratify some patients. I have had six of these patients that had been turned down by others and I got excellent results.

Dr. Coleburn (closing discussion).—I have little to say in response to the discussion of my paper, because very few of the remarks made pertain to my paper in any way. I only meant to discuss the question of the use of graduated tenotomy in cases of true heterophoria, eliminating all possible factors before attempting the operation. Also eliminating all possible rheumatic or toxic origin that might exist. I try to be perfectly honest with my patients in this work. Regarding the expansion of the fibres, it exists and it certainly has to do with the moving of the eye and is a factor in the graduating tenotomy. Regarding Dr. Bulson's position, I have little to say. I think for a man who has never given it any attention to condemn it, is unfair. I think there is much to be considered in these auxiliary tissues, and I have devoted a great deal of time both on the living patient and the cadaver and tried to elucidate some of these questions. The method of Fox is of great value. The determining of weak and strong muscles is always annoying. I think observations concerning the attitude of the patient in the use of his eyes, when he is not aware of your observation, will aid you in determining which to do.

THE SUPRARENAL GLAND AND ITS PREPARATIONS IN OPHTHALMIC PRACTICE.

G. E. De Schweinitz (*Therapeutic Gazette*, July 15) finds the suprarenal preparations of value in hyperæmia of the conjunctiva when due to local irritation, to relieve congestion, irritation and lachrymation caused by ordinary conjunctivitis, and in the treatment of blepharospasm and spring catarrh, where they have a decidedly curative effect. He finds them advantageous in trachomatous pannus and various types of vascular keratitis, and to enhance the action of cocaine, atropine, eserine and pilocarpine. They facilitate the introduction of lacrymal probes by lessening the congestion. The author prefers freshly prepared solutions of the dried gland, as he has found that adrenalin solutions frequently produce a marked irritation of the mucous membrane. When adrenalin is used he advises using it in very weak solutions.

MEDICAL SOCIETIES.

PROCEEDINGS OF THE OPHTHALMOLOGICAL SOCIETY OF THE UNITED KINGDOM.*

CHARLES HIGGINS, F.R.C.S., Vice-President, in the Chair.

Friday, July 4, 1902.

DETACHMENT OF THE RETINA.

THE CHAIRMAN described a case of detachment of the retina in which complete recovery took place.

The patient was a lady, aged 36, who had been under his care since 1892 for myopia of a high degree, and had in 1899 nearly lost the sight of the left eye from detachment of the retina. In May, 1901, she first noticed obscuration of the upper part of the field in the right eye. There was a doubtful history of injury some weeks before. Detachment of the retina at its lower part was discovered. She was treated for nearly a month in hospital, lying in the prone position, with mercurial inunction and vapor baths, and she left with some improvement. Two weeks later her sight returned whilst lying down in the afternoon; she went to sleep for some hours, and on waking found the sight as good as it had been before the detachment occurred. Ophthalmoscopic examination showed some floating shreds in the vitreous, but no sign of detachment. On January 23, 1902—nearly nine months since the detachment appeared, and eight months since the recovery of vision—she could see with correction $^6/_{24}$ and J. 1. The field was almost normal, and there was no sign of detachment.

MR. E. H. CARTWRIGHT also read notes of a case of detachment after cataract extraction:

The patient was a man, aged 72, who had had a cataract removed from his right eye, without iridectomy, in February, 1899. Subsequently two capsulotomies had been done. In April, 1900, Mr. Cartwright first saw him, and with his correction he could read $^6/_6$ and J. 1. In January, 1891, he again attended, with the history that two weeks previously the sight of the right eye had suddenly failed late one day;

---

*British Medical Journal.

everything looked at appeared red, and the sight was lost below the horizontal meridian. The sight has got gradually worse since. The vision in the upper part of the field was equal to counting fingers at 6 inches. L. V.=P. L. Almost complete cataract. Projection good. In the right eye the upper half of the retina was detached, and this obscured the view of the disc. Urine and heart normal. The patient was kept in bed, and on January 9th a scleral puncture to the outer side of the superior rectus tendon as far back as possible was made, and from this some clear watery fluid exuded. January 25th—Disc visible, but vision was not improved. After this he was discharged, but was seen from time to time with gradually improving vision, until September, 1901, he could read $^{16}/_{18}$ and J. 2. The field was normal except on the temporal side. On September 27, 1901, the left cataract was extracted, and on November 29, 1901, his vision was as follows, with correction: R. V.=$^{6}/_{12}$ and J. 1; L. V,=$^{6}/_{6}$ and J. 1.

Mr. Maclehose mentioned a case he had seen of detachment due to a blow, which had recovered.

Mr. Hartridge thought that the experience of the authors was exceptionally good, for he himself had never seen a case of such complete recovery.

Mr. Jessop remembered only one case which had recovered, and this was reported by Mr. Nettleship and Mr. Tweedy to the Society some years ago. He had seen temporary improvement, but it never lasted.

Mr. Devereux Marshall said the only case of complete recovery he knew was the one referred to by Mr. Jessop. In a case he had had, where in the second eye the retina had become detached, a good result was obtained, and this lasted for several months, but it recurred, and the patient became quite blind. He also remembered another case due to a blow, in which the retina became re-attached, but as he had been unable to trace the patient after the first few weeks following the accident, he had not thought it well to publish it as a cure.

The Chairman, in reply, said that he doubted very much whether the treatment adopted in his case had anything to do with the recovery of vision.

CONVERGENT STRABISMUS.

MR. SYDNEY STEPHENSON read a note on some cases of convergent strabismus treated by lengthening the tendon of the internal rectus, and exhibited the patients. The method adopted was that of cutting the tendon of the muscle, either obliquely or in some other manner by means of which the cut ends could be united in such a way that the muscle was thereby lengthened to the required degree. He had operated upon six cases with gratifying results.

THE CHAIRMAN thought that this method was likely to be of considerable benefit.

CARD SPECIMENS.

The following card specimens were shown: Mr. J. H. Parsons: (1) Gumma of the Ciliary Body; (2) Metatastic Carcinoma of the Choroid; (3) Annular Leuco-sarcoma of the Ciliary Body. Mr. Doyne: Rupture of Eyeball with Prolapse of Iris and No Dislocation of the Lens.

FIFTY-THIRD MEETING OF THE AMERICAN MEDICAL ASSOCIATION.*

Held at Saratoga Springs, N. Y., June 10 to 13, 1902.

SECTION ON OPHTHALMOLOGY.

(Continued from last issue).

THIRD SESSION.

AN OPERATION FOR THE RESTORATION OF A CULDESAC FOR THE WEARING OF AN ARTIFICIAL EYE, WITH REPORT OF CASES.

JOHN E. WEEKS (New York) spoke of the difficulty of establishing a culdesac, the various operations, and said various kinds of tissue had been transplanted, a flap of integument or mucous membrane being most frequently used; partial success has attended all, but because of shrinking there is usually loss of the primary favorable result. The operation advised is to dissect the lid from the orbital tissue, carrying the dissection down to the tissue just above the periosteum; the skin on the inner aspect of the arm is taken as a flap, the margins of which are sutured to the margins of the defect and held in place by a sheet of rubber tissue lubricated by bichlorid vaseline. Seven operations, all attended by success.

---

*American Medicine.

THE RELATIVE INDICATIONS FOR ENUCLEATION AND THE MULES OPERATION.

N. J. HEPBURN (New York) spoke of the indications for removal of the eyeball, viz., danger to fellow eye, pain in affected eye, extensive destruction of globe, malignant growth and cosmetic effect, and said it ranked with major operations, such as removal of a limb. The Mules operation is preferable when time of healing is no object, when the sclera is healthy and there is no affection of the optic nerve. The balls have been mostly of glass, but gold and platinum have been used, and lately experiments have been made with balls of hardened paraffine, which are lighter in weight, adaptable in size and nonabsorbable. The operation is contraindicated when sclera is not healthy and in malignant or tuberculous disease of any part of uveal tract; also in glaucoma and gouty affections, and where old cyclitis exists.

Discussion.—WOOD (Chicago) emphasized the difficulties of forming a culdesac and said the attempts to put in Thiersch grafts were almost invariably attended by failure; we must have something to hold the flap in place, and he usually used iodoform strips for this purpose; was glad to hear of Weeks' method.

BURNETT (Washington) related a case in which he had used a rubber piece something after the method of Weeks, getting a perfect culdesac measuring 2½ inches from upper lid to bottom.

BLACK (Milwaukee) asked if paraffine could not be used in place of the rubber tissue.

TODD (Minneapolis) said he had inserted glass ball in 50 operations, and in only two did it come out, in one of which it was removed on account of irritation.

WEEKS, in closing, said it was necessary to attach the flap to some fixed point, and he preferred to attach it to the periosteum. It was necessary to have a firm sheet to hold the flap in position, and paraffine would be too friable.

HEPBURN said that the Mules operation had fallen somewhat into disrepute, but was being again resurrected, and in the last four years he had seen 70 or 80 cases, and thought we were doing the operation better now because the cases are better chosen.

ON THE SYMMETRY OF OUR VISUAL APPARATUS AS A DUAL ORGAN. PLEA TO MODIFY THE CUSTOMARY NOTATION OF THE OCULAR MERIDIANS.

HERMAN KNAPP (New York) said that of 1,473 cases examined in 80 per cent. the meridians were symmetrically placed, and in 20 per cent. asymmetrically. The vertical meridian has the strongest curve about five times as often as the horizontal. In the intermediary positions the strongest meridian inclines to the nasal side about twice as often as to the temporal. In order to establish a uniform designation of the meridians of the eye and of the field of vision as well, he recommended a method which is to begin at the nasal end of the horizontal meridian in both eyes, counting upward and going all around the circle, which puts us in perfect harmony with the law of symmetry, and the diagram will read the same whether looked at from before or behind. The chart contains meridional and parallel circles all around, so that any point or defect can be designated by two numbers, that of the meridian and of the degree of latitude. The writer considered the proposition which he made at Utrecht, at the International Ophthalmological Congress, the best of many that had been tried, as it rested upon a scientific basis, is easy of application and meets the requirements of daily practice. The change from the old system would require:

1. A new plate on the spectacle frame for the left eye, placing zero on the nasal and 180 on the temporal side.
2. A diagram of the prescription with the same change for the optician.
3. Perimeter charts marked in the symmetrical way.

Discussion.—RISLEY (Philadelphia) said he regretted that he could not agree with Knapp as to the advantage of abandoning the methods employed for the past 30 years and confusing the records which had been made by the adoption of a new, unless it were an unquestionably better and more scientific method. He said that in all sciences where the circle is introduced the eastern or left-hand end of the horizontal line has been used as the starting point and the degrees counted upward, and we should hesitate before we divorce our ophthalmic records from a method so universally used by scientific men in all fields.

Burnett (Washington) did not agree that the visual apparatus in man is a dual organ in the same sense that the hands are, but must be considered as a cyclopian eye and the symmetry of the visual apparatus does not consist in the relations, nasal and temporal, of each globe to a vertical plane. The cyclopian eye has no nasal and temporal, but a right and left side, and this method divides the visual apparatus into two halves, for which there is no warrant. He could see no practical advantage in it.

Jackson (Denver) said the tendency is to get some one basis and use it in many departments of life, and we would do best to have our methods correspond to those of other branches of science.

Concerning the Symptomatology and Etiology of Certain Types of Uveitis.

Geo. E. de Schweinitz (Philadelphia) spoke of the significance of the symptom, keratitis punctata, a deposit of opaque dots, generally arranged in a triangular form upon the posterior lamina of the cornea; three disease manifestations are encountered to which this name is applied: (*a*) keratitis superficialis punctata, (*b*) keratitis punctata vera, or syphilitica, (*c*) keratitis punctata. It has been noticed by many that when the characteristic deposits appear upon the posterior surface of the cornea recent patches of choroiditis are found often and perhaps always in some portion of the fundus; in all varieties of iritis corneal lesions are always demonstrable by careful examination. The causes of uveitis may be diathetic, toxic or infectious; as rheumatism, gout and diabetes; syphilis, gonorrhœa or tuberculosis; septic fever and diseases of the blood. He spoke of the symptomatology of recurrent and malignant uveitis terminating in secondary glaucoma and cataract and of the significance of the size, disposition and color of the deposits; of acute uveitis, beginning as a sclerotico-choroiditis, especially in young subjects, terminating in myopia and posterior polar lenticular opacity; of chronic uveitis of mild type in elderly subjects associated with hæmorrhage in the vitreous; relapsing plastic uveitis, with reference to the insidious approach of certain types in gouty and rheumatic subjects. In one form the primary lesion appears in the fundus as a well-defined choroidal change; in another class it appears first as a flitting conjunctival congestion, the hot eye of Jonathan Hutchinson, the vasomotor dilatation of Swan Burnett and the periodic episcleritis of Fuchs.

AN ANALYSIS OF THIRTY-SEVEN CASES OF UVEITIS, WITH SPECIAL REFERENCE TO (1) ETIOLOGY, (2) RELAPSES, (3) RARE EARLY SYMPTOMS, (4) IMPORTANCE OF PERIMETRIC EXAMINATIONS.

HIRAM WOODS (Baltimore) studied the cases from the standpoint of:

1. Visual symptoms with intraocular appearances, sudden and sometimes complete loss of sight, descemititis with metamorphopsia, photopsia, scotomas and muscæ; dim areas in field brought out by perimetric examination.

2. Etiology; there were a small number showing syphilis, scrofula or rheumatism, intestinal or menstrual disorders, acute systemic infection and sympathetic ophthalmia.

3. Relapses; the 37 cases indicate that menstruation in its establishment, or later if abnormal, intestinal disorders, and nasopharyngeal diseases are among the causes of plastic choroiditis, either as direct causes or by altering the resisting power. Cases of obscure etiology show a greater tendency to relapses; the changes in so-called choroidal hyperæmia demand guarded prognosis and repeated examinations.

THE DIAGNOSTIC SIGNIFICANCE OF KERATITIS PUNCTATA.

HARRY FRIEDENWALD (Baltimore) said that keratitis punctata interna, or descemititis, is observed in various vascular diseases, is found in every case of iritis, is an almost constant sign of exudative choroiditis and sometimes found in syphilitic choroiditis and acute and chronic cyclitis. When no other signs of uveitis are noted except descemititis, it is due to carelessness in examination. The writer has reported 53 cases, and even including the earlier ones, in which the examination was not made with the thoroughness of later years and those in which opacities of the media prevented examination, about three-fifths had exudative choroiditis. It is due to carelessness in examination that so many cases are recorded as serous iritis and serous cyclitis. Exudates in the anterior portion of the choroid may be beyond the reach of ophthalmoscopic examination. We find descemititis in choroiditis only when there is exudative inflammation. "Serous iritis" and "serous cyclitis" have no clinical basis, and the terms should be discarded.

INJURIES OF THE EYE PRODUCTIVE OF DISEASES OF THE UVEAL TRACT.

HOWARD F. HANSELL (Philadelphia) said that the ocular injuries that produce diseases of the uveal tract include the great majority of traumatisms to which the eye may be subjected, and that apparently insignificant injuries are sometimes followed by disastrous results; that the character and intensity of the disease depends upon the nature of the injury and the condition of the patient when the injury is received; contusion, concussion, penetrating and incised wounds and the entrance and lodgment of foreign bodies, will almost always induce a plastic or purulent inflammation of the uveal tract from which recovery is seldom complete, and partial or complete loss of vision common; syphilitic, diabetic and tuberculous diathesis delay recovery; the diseases are modified by early surgical treatment; enucleation is to be practiced immediately when a foreign body lies imbedded in the ciliary region and cannot be extracted, or when the eye is mangled.

THE PATHOLOGY OF UVEITIS.

W. H. WILDER (Chicago) said all the divisions of the uveal tract, iris, ciliary body and choroïd, may be involved by severe inflammation of any of them. He considered particularly lesions of the choroid. A satisfactory classification is difficult; may be grouped in plastic, serous and purulent forms; in acute suppurative choroiditis there is rapid infiltration of the vascular layers; vessels become blocked; external layers become distended by exudate; the retina is lifted up, and becomes involved in the inflammatory process; vitreous becomes turbid, and intraocular tension is increased. Panophthalmitis may result. Most cases are of traumatic origin, but may be metatastic, or pseudoglioma may result. In choroidoretinitis and central choroiditis changes in the vitreous may precede the choroiditis. The writer had observed opacities of the vitreous so fine as to escape hurried examination without a mydriatic.

PILOCARPIN INJECTIONS IN DISEASES OF THE UVEAL TRACT.

T. A. WOODRUFF (Chicago) observed that in treatment of diseases of the uveal tract, epecially in exudative choroiditis, disases of the vitreous and chronic irido-cyclitis, very few remedies were of value. Disturbance of the general health is a very frequent cause of inflammatory degeneration of this tract, although in many instances the etiologic factor is shrouded in mystery. Although many lesions are irreparable, a large minority are capable of improvement by the internal administration of thiosinamin, subconjunctival injections of mercury, common salt, etc. But none of them give as good results as the hypodermic injection of pilocarpin in gr. ⅛ to ¼ doses in conjunction with the internal administration of potassium iodid. Sufficient emphasis has not been placed upon the extreme value of these agents in certain deep lesions of the eye.

Discussion.—DE SCHWEINITZ (Philadelphia) said he desired to emphasize, as his colleague (Friedenwald) had done the great importance of investigating the fundus in these cases. He believed the old methods of treatment were best, and had never seen a case in which some benefit could not be derived from mercury.

SHORT (Georgia) called attention to the great prevalence of the disease among negroes, and said that females were especially predisposed.

ZIEGLER (Philadelphia) said that turpentine was an excellent remedy in this class of cases, and thought its action somewhat similar to that in typhoid fever.

COULTER (Chicago) said that he had been struck by the tendency to recurrence of certain types of uveitis in the late winter or early spring months; and he had observed a number of cases in which he could predict a return of the trouble in the months of March and April; and in these cases he had noticed that elimination of the kidneys was below normal, with sometimes a slight suggestion of albumin.

CONNOR (Detroit) had obtained good results in the chronic cases by the use of potassium or sodium iodid, beginning with small doses and systematically increasing it.

GARDNER (Chicago) spoke of the value of exercise and electricity, saying they were excellent adjuvants.

WOOD (Baltimore), in closing, said the cases were much more frequent among females, and agreed with Woodruff as to the value of pilocarpin.

(Continued next issue.)

ABSTRACTS FROM MEDICAL LITERATURE.

By W. A. SHOEMAKER, M.D.
ST. LOUIS, MO.

IRIDECTOMY FOR GLAUCOMA.

The following statistics are taken from an article by Dr. Fritz Mandel (*Berliner Klinische Wochenschrift*, Jan. 27):

Acute Glaucoma—73 Cases.

	No.	Per Ct.
Good results	47	64.4
Fairly good results	13	17.8
Not improved	9	12.3
Enucleated because of pain	4	5.4

Chronic Inflammatory Glaucoma—35 Cases.

Good results	9	25.7
Fairly good results	18	51.4
Not improved	6	17.1
Enucleated (absolute glaucoma)	2	5.7

Monocular Glaucoma—87 Cases.

Good results	4	4.6
Fairly good results	62	71.2
Not improved	17	19.5
Enucleated (absolute glaucoma)	4	4.6

Secondary Increase of Tension—54 Cases.

Good results	11	20.4
Fairly good results	16	29.6
Not improved	7	12.9
Enucleated (absolute glaucoma)	20	37

THE MICROSCOPIC EXAMINATION OF CONJUNCTIVAL DISCHARGE.

Edgar S. Thompson (*Pediatrics*, July 1st) describes the bacteriology of conjunctival discharges, mentions the form chiefly found, and the methods of staining. The Weeks' bacillus is most frequently found. It is a short, thin bacillus, shorter and somewhat thinner than the bacillus tuberculosis, and stains to nearly the same intensity as the pus cells—usually a little deeper—but not so deep as the pus nuclei. As a consequence, it is not so conspicuous as other more deeply-staining germs, and to find them the specimen must be carefully and closely examined. In typical cases they occur in large numbers, scattered in the mucus and between the cells and the pus cells. The gonococcus is a frequent form in severe cases of conjunctivitis, and the only form that can be confounded with it is the diplococcus intracellularis meningitis. It differs, however, as being mostly outside the cells and never within the nucleus; it also grows readily in cultures, while the gonococcus does not. It produces an acute purulent conjunctivitis, and usually differs a little in microscopic appearance from the gonococcus, but they may be exactly alike. The pneumococcus is frequently found as the cause of acute contagious conjunctivitis, or "pink eye." The various forms of staphylococcus occur commonly in conjunctival discharge, and have very little significance.

THE THERAPEUTIC USE OF SUPRARENAL EXTRACT IN THE TREATMENT OF DISEASES OF THE EYE.

At a meeting of the New York County Medical Association, held May 19th, Dr. Wilbur B. Marple discussed this subject. He said that the action of the suprarenal extract in relieving inflammatory redness of the eye was certainly little short of magical, and it delighted the patient; but so also would the patient be pleased by the use of morphine for the relief of pain. We should ask ourselves seriously whether or not suprarenal extract was curative in the long list of diseases for which it had been recommended. His own experience led him to assert that it was not curative. Two cases of conjunctivitis were reported, in which, contrary to his instructions, adrenalin had been used for many weeks. Both patients found it necessary to increase the frequency of the instillations after a short time, and finally to increase the strength of the solution; and, instead of the drug being curative, it had distinctively aggravated the local condition. There could be no question that adrenalin would secure a bloodless operation, but he was far from being convinced that this use of the extract was desirable, although undoubtedly exceedingly convenient. There was certainly an increased possibility of infection, and hence he would not think of using it in an operation in which the globe was opened; and there was reason for believing that the use of this remedy lowered the resistance of the tissues and interfered with healing. For slight operations on the eyelids the extract could be used apparently without harm, and enabled the operator to dismiss his patients from the office more quickly. A remarkable case was referred to, in which an epitheliomatous growth on the inner edge of the eyelid, which had existed for a number of years, began to diminish in size coincidently with the employment of adrenal in solution as a placebo. After having used this solution for a number of months, it was found that the growth had entirely disappeared, and the cosmetic result was far better than could have been secured with the knife. The action of adrenalin in this case was explained by Dr. Marplc on the theory that it destroyed the blood supply of the epitheliomatous mass. The patient was exceedingly susceptible to the action of adrenalin, because when a pledget of cotton moistened with this solution was laid upon this lady's cheek the skin became white underneath the cotton.

OPTIC NEURITIS IN BRAIN DISEASE.

De Lapersonne *(Gaz. des Hop.* (Paris), February 8 to June 24) calls attention to the following points: In case of a cerebral neoplasm or a localized syphilitic lesion in the brain the optic fibres are comparatively little affected; while there may be a decided conjestion of the papilla, central and peripheral visual acuity is frequently but slightly impaired. The contrast between the extensive and severe lesions of the papilla and the acuteness of vision, which frequently remains from one-third to one-half, is quite striking. Perles and Uhthoff have reported cases of congested papillæ, in cases of syphilitic gummata which completely recovered. Complete cures of edema of the papilla have been reported, after trephining. On the other hand, septic neuritis, the result of meningitis and meningeal tuberculosis, has the element of infection superadded to the edema of the optic nerve, and the result is rapid destruction of the optic fibres.

THE AMERICAN JOURNAL
OF
OPHTHALMOLOGY.

VOL. XIX. OCTOBER, 1902. No. 10.

ORIGINAL ARTICLES.

SOME REMARKS ON ARGYROL (SILVER VITELLINE).

By ADOLF ALT, M.D.,
ST. LOUIS.

ALTHOUGH, as I have stated at different occasions, protargol has given great satisfaction in my hands in the treatment of conjunctival affections, notably in blenorrhœa neonatorum, I have in the last few weeks given extensive trials to a new substitute for nitrate of silver. I refer to argyrol (silver vitelline). The peculiarities and efficiency as a therapeutic agent of this new silver preparation are such that, in my opinion, it should be speedily added to the therapeutic agents used in ophthalmic practice, and I do not hesitate to recommend it to my confrères, who perhaps have as yet not become acquainted with it.

The following concerning this new silver preparation is published in the *Medical Record* (May 24, 1902) by Drs. A. C. Barnes and H. Hille of Philadelphia, its originators:

"The chemical and physical properties of this compound are unique. First of all, it contains 30 per cent. of silver—twice the amount of any proteid silver heretofore produced. The extreme solubility of our silver compound is remarkable. One ounce of it is freely and completely soluble in less than a dessertspoonful of water—a fact which will be wondered at by physicians who have been able, only with great difficulty, to obtain even a 5-per-cent solution of other proteid silver compounds.

"Solutions of silver vitelline, no matter how concentrated, do not precipitate albumen or sodium chloride; hence it can have no coagulating or caustic effects upon mucous membranes, nor can it be chemically changed by their secretions. The disadvantages of silver nitrate are due to its coagulating effect on mucous membranes, whereby its action is limited to the surface, and its penetrative power to the deeper structures prevented; it is, moreover, irritating and caustic. Briefly stated, the pharmacologic laws governing the therapeutic value of any silver compound are these: It must not coagulate albumen nor precipitate chlorides; must not be irritating, and must possess the power to penetrate into the submucous structures. It is also a pharmacologic axiom that, with the above conditions fulfilled, a silver salt depends for its therapeutic activity upon the amount of silver contained; *i. e.*, the greater the amount of silver, the greater its therapeutic value.

"We have made a number of experiments to determine the penetrative action of silver vitelline upon the human tissues covered with mucous membrane, but the simplest one was suggested to us by Dr. Edward Martin, Professor of Clinical Surgery, University of Pennsylvania. This experiment consists in immersing a strand of ordinary catgut in a solution of our silver salt, and afterwards making sections of the catgut. For this purpose the thickest piece of catgut obtainable may be immersed in a 1-per-cent. solution of silver vitelline over night; on the following morning section of the gut reveals that it is impregnated through and through with the silver. This is the severest test that can be made, and demonstrates that solutions of our silver salt have an intensely penetrating action on albuminoid structures, even when they are hard, tough and tightly compressed. The integrity or flexibility of the catgut are in no wise impaired by the immersion. The practical deduction from this experiment is that this salt will exert the antiseptic effects of silver in the deep submucous structures where, in most pathological conditions, gonococci or other pathogenic organisms, find and maintain a lodgment in spite of energetic measures to eradicate them.

"Reasoning from its chemical and pharmacological attributes, our silver compound should be valuable in the treatment of genito-urinary diseases and in the various inflammatory affections of eye and nasal passages in which silver nitrate or one of its substitutes is indicated.

"It is safe to predict that silver vitelline will practically revolutionize the treatment of certain inflammatory diseases of the eye, such as ophthalmia neonatorum, purulent conjunctivitis, dacryocystitis, etc., in which silver is indicated and always employed, but in which a silver salt, which is freely soluble, penetrating to the deeper tissues, non-irritating, and, at the same time, containing a high proportion of silver, is regarded by oculists as a desideratum. Silver vitelline contains 30 per cent. of silver—about half the amount of silver nitrate; hence a 50-per-cent. solution of silver vitelline corresponds to a 25-per-cent. solution of silver nitrate, with greater penetrating action, but without the caustic irritating properties of the latter."

I can only add that, as far as I have been able to try it, this new silver preparation seems to fulfill in ophthalmic practice all that the authors expected.

I have used it in a 5-per-cent. solution in a number of cases of chronic and subacute conjunctivitis, and in cases of trachoma after the removal of the granular tissue. It is non-irritating, causes no pain, and in every case its application has brought about a visible improvement. I have not used it long enough to know whether and in what time it is likely to cause argyrosis; but, on account of its extreme solubility, it may perhaps be less likely to bring on this disagreeable discoloration of the conjunctiva.

It is certainly worth an extensive trial.

THE RETINITIS ALBUMINURICA OF PREGNANCY.*

BY DR. S. C. AYRES.

CINCINNATI.

THE occurrence of albuminuria in pregnancy is probably seen in only a small percentage of cases. It is very significant in its relations to eclampsia, and is looked upon with suspicion and even dread when associated with headache, œdema of the limbs, nose bleed and disturbance of the heart. As to its frequency, our distinguished colleague, Dr. Zinke, says it is variously estimated at from 2 to 20 per cent., but that from 10 to 15 per cent. would be the proper estimate.

While albuminuria occurs as above stated, the involvement of the optic nerve and retina is much less frequent. Dr. Zinke says: "Judging from the meagre reports of cases of albuminuric retinitis occurring during gestation, the manifestation of this complication appears to be exceedingly rare. In the twenty-seven years of my practice, and a record of 3,000 labor cases, I have not seen a single instance of albuminuric retinitis in pregnancy." Text-books in general say but little on this subject, which is evidence that writers and men of large experience meet the disease but seldom.

My own experience coincides with that of others, and yet when the optic nerve does become involved during gestation, it is a very grave and dangerous complication. I have seen several cases where total or almost total blindness resulted, and, again, others where the result has been more fortunate, and where the mother was restored to the enjoyment of sight. The observation of two cases observed recently, and two a few years ago, prompt me to bring this very important subject before the Academy, hoping to elicit the experience of its members.

CASE I.—Mrs. X., primipara, æt. 34, who was pregnant about six months, noticed some impairment of vision—only a blurring and indistinctness. As albumin had already been detected in her urine, I was called in consultation, and with the ophthalmoscope found the following condition: In the right eye there was a patch of exudation above the optic disc and one below it, and six small spots near the macula, causing a blurring of central vision. There was no optic neuritis. In the left eye there were two spots of exudation above and two below the macula, but not encroaching upon it, and hence not causing an impairment of central vision. On the outer side of the optic disc there was a broad, flame-like retinal hemorrhage. There was no optic neuritis, the nerve head presenting a normal appearance. Vision in the right eye was $^{15}/_{\text{xxx}}$, and in the left eye practically perfect. Her family physician was very much alarmed, and feared an increase in the retinal disease, and proposed a premature delivery. To this I could not consent, on the ground that the optic discs were quite normal in appearance, free from the haziness and blurring so characteristic of this disease. It was a mild case of retinitis, but *not* a neuro-retinitis. The patient was anxious to have her child come to full term, and the appearance of the retinæ did not justify any interference. She was put on judicious treatment to relieve the albumin. Her general health was good, and there were no headaches, so characteristic of Bright's disease. In the course of three weeks spontaneous premature delivery came on, and a dead child was born.

---

*Read before the Academy of Medicine, April 14, 1902.

I examined the mother a few months later, and found vision in the right eye $^{15}/_{\text{xx}}$ and $^{15}/_{\text{xv}}$ in the left eye.

Case II.—Mrs. Y., pregnant about six months with fourth child. For some weeks she had noticed a gradual failure in vision of both eyes. Recently it had become so bad that it was with difficulty she did her housework. She could not read, and it was even difficult for her to recognize faces a few feet distant. Her physician, Dr. Trush, had already recognized the presence of albumin, and asked me to examine her. The ophthalmoscope revealed a very typical case of neuro-retinitis of severe type, with marked swelling of the optic discs, obscuration of the nerve heads, and numerous hemorrhages and exudations in the retina, extending over the retina as far as it could be seen. Vision was reduced to barely $^{15}/_{\text{c}}$ in each eye. If it continued to fail at the rate it had done recently, it seemed more than probable that in a short time she would be entirely blind in both eyes. The retinal condition was very serious, and the prognosis unfavorable unless the cause could be removed. This was fully appreciated by her physician. My advice was to bring on premature labor, in order to save her from impending blindness. The long time before which normal delivery would take place would surely increase the gravity of the situation. This was fully explained, and the question left to her and her husband to decide. She very promptly, on religious grounds, refused the proposition. A week later nature very kindly came to her relief, and she had a spontaneous miscarriage. Three months later I examined her eyes again, and was gratified to find her vision very greatly improved, being $^{15}/_{xx}$ in each eye. She could read ordinary print without difficulty. The retinæ had not yet cleared up, some of the exudations were still visible, but the central portion of the retinæ around the maculæ was quite free, and central vision practically perfect.

CASE III.—In Mrs. Z.'s case there were nine pregnancies. In the first three there were no eye complications. In the fourth she was blind for two weeks preceding delivery, but sight returned promptly afterwards.

In the fifth pregnancy her vision was bad from about three and a half months or until confinement. She also suffered constantly from headaches. After delivery vision became as good as usual.

In the sixth pregnancy sight was also bad from about the fourth month until full term, when it again recurred.

In the seventh pregnancy she suffered from headaches and sight was slightly affected.

The eighth pregnancy was followed by a miscarriage at two months—no eye symptoms.

In the ninth pregnancy she had a convulsion at about six and a half months, and was totally blind for forty-eight hours. Prompt and active treatment was instituted, but the fear of another convulsion and of further implication of the eyes induced her medical adviser to bring on labor at about the seventh month.

During each of these pregnancies, when the eyes were involved, there was albuminuria more or less abundant. Her vision was not estimated on these different occasions, except the last one, so that this report is not as concise as it should be.

In relation to the last pregnancy, I will say: I examined her July, 1890, after the last pregnancy. Vision was reduced to 0.1 in R. E. and 0.7 in L. E. There were characteristic alterations in the fundus of each eye, but more marked in the right eye, where there was a chorio-retinitis. There were numerous white patches in the retina of the left eye.

I examined her in April, after a period of twelve years, and find vision in the right eye perfect. In the left eye V= $^{15}/_{XL}$, but with +cyl. 0.75 ax. 110° V=1. This was very gratifying, as her vision, as above stated, was markedly reduced, especially in the right eye. The retinæ looked healthy and normal, and no traces of the patches were visible.

Case IV.—Mrs. S., examined August, 1893, gave the following history: Last April, when about three months pregnant, her sight very rapidly failed in both eyes. In May she had a miscarriage. It is now three months since this occurred, and I found vision reduced to $^{2}/_{CC}$ R. E. and $^{3}/_{CC}$ L. E. The retinæ showed characteristic changes in both eyes, with marked alteration in the macula luteæ. There was still some albumin in the urine. She was kept under observation for three weeks, and a tonic treatment ordered. Vision R. E. increased to 0.1 and in L. E. to $^{5}/_{CC}$. She has not been seen since.

Dr. E. G. Loring,* in 1882, was probably the first oculist to specifically recommend abortion to save the vision of the mother. He reports the case of a woman of thirty-five, who was pregnant for the third time. In the first confinement she lost partial vision of the left eye, and in the second pregnancy it was entirely destroyed, and vision of the right eye was reduced to one-third of normal vision. In her third pregnancy she applied to Dr. Loring for advice, and he recommended premature delivery. The operation was done, and vision was retained.

S. D. Risley† reports a case of retinitis albuminurica in a woman aged thirty-five, pregnant between four and five months. Vision was reduced to counting figures at two feet in right eye and to $^{10}/_{CC}$ in left eye. He advised an abortion, but to this she refused her consent on moral grounds. Dr. Risley says: "There were still more than four months before her gestation would naturally terminate. Long before its completion, however, she would be hopelessly blind. If even her life were spared to the full time, she would then be exposed to the serious accidents which hang like a pall over the child-bed of an albuminuric woman." After consulting her spiritual adviser, she submitted to the operation. She had a very serious time, but finally recovered, and within a year was restored to perfect vision in the left and almost perfect vision in the right eye.

---

*Trans. Am. Ophth. Soc., 1882.

†Trans. Am. Ophth. Soc., 1886.

Van Vleet, in *Medical Journal*, 1891, reports four cases of albuminuria in pregnancy accompanied with retinitis, in three of which the termination was fatal, and in the fourth case a miscarriage fortunately occurred, and saved both the life and the sight of the patient. He strongly recommends the production of abortion in such cases.

Dr. Lucien Howe,* after stating that he had analyzed all the cases he could find published as far back as 1870, says these tend to show that where the vision begins to be impaired in the last two weeks of pregnancy, recovery follows immediately. Of those described as being in the eighth month or thereabouts when the retinitis commences, not one-half recovered, and several did not materially improve. Finally, when this began earlier than what was estimated, as the middle of the seventh month, when nature did not interfere by bringing on a miscarriage, and when the patient escaped with her life, it was only to remain blind forever afterward.

Dr. Robert L. Randolph says, in Bulletin No. 41, Vol. 5, *Johns Hopkins Hospital Bulletin:* "It is clear that much weight should be attached to dimness of sight occurring at any time during pregnancy."

Dr. J. E. Weeks† says: "Regarding the anatomical changes affecting the eye in albuminuria, it is safe to say that there is but little inflammatory action involved; there is but little infiltration of leucocytes and increase of nuclei, and very little hyperplasia of connective tissue, such as we would expect to find in so chronic a condition if true inflammation were present. Extravascular, the condition usually is simply one of the escape of the elements of the blood from the vessels, in mild cases the watery portion producing simple œdema."

---

*Am. Jour. Ophth., 1885.

†Archiv. Ophth., Vol. XVII.

"The escape of the elements of the blood from the vessels must of course be due to some influence that weakens their walls—an impairment in their nutrition. This may be produced by a change in the chemical composition of the blood or by a diminution in the supply by obstruction, etc., or both conditions may obtain at the same time." Under this category come the retinitis of pregnancy, scarlet fever and diphtheria. The retinitis associated with the contracting kidney presents different pathological changes. In the diseases just mentioned the retinitis passes off with the subsidence of the disease or with a premature delivery. In chronic Bright's disease there are marked changes in the arteries, due to endarteritis and periarteritis. There are also striking changes in the choroid, due to hemorrhages and exudations. These are characterized by the white patches in the choroid, circled, as they often are, by a ring of pigment.

It is probable that we may have to revise our opinions as above stated on the influence of albuminuria in pregnancy. Investigations on another line have been made and are being made which will materially overthrow the ideas which we have held for so many years. While they were not entirely satisfactory, yet they were accepted for want of a better explanation of the serious symptoms which the physician is called upon to face. The question of the diminished excretion of urea is not a new one, but it has recently been applied to the cases mentioned in this paper, with results which are rather startling as they are rational, and quite fully explain the phenomena present.

Dr. S. Marx (*Med. Record*, April 20, 1901), in a very interesting and practical paper on the "Toxæmia of Pregnancy," states that this condition arises, not from albumin, but from diminished excretion of urea. He states that many women with grave nephritic diseases go to full term with little or no discomfort. He further states that albumin and casts have no meaning for him in the presence of a normal urea excretion, for with that, he is in a position to know that sufficient of the effete products are being excreted, and the condition of the safety valve in the engine of the body is evidenced by the behavior of this element.

"Whether this urea is really the offending agent or not, modern investigation does not allow us to state with any degree of positiveness. It is enough to this end to state that when there is a lessened secretion the patient suffers, and when hypersecretion occurs the patient is freed from those symptoms indicative of toxæmia.''

His conclusions are as follows:

''1. Toxæmia of pregnancy is a complex condition depending on more than one factor.

''2. Women go to term with albuminuria without symptoms referable to toxæmia. When such symptoms arise, they are not caused by the albumin present, but by faulty urea secretion.

''3. In the most desperate and malignant cases there is found neither albumin nor casts.

''4. Urea is always found markedly diminished in the so-called toxæmia of pregnancy or urinæmia.

''5. Finally, I make a strong plea for a regular and methodical course of urea estimation in all cases of toxæmia, or for the relegation to secondary importance of the time-honored examination for albumin.

''6. Progressive diminution of urea secretion, with or without albuminuria, is the sole indication for the induction of premature labor, which is especially indicated when conscientious medical treatment fails.''

Dr. E. E. Morse, Washington, D. C., in the April number of the *American Journal of Obstetrics*, in an article on ''Albuminuria in Pregnancy,'' covers the period pro and con in relation to the question of albuminuria in eclampsia. He says that ''Gerster has collected a series of 108 cases, all eclamptics, in which, after repeated and careful examinations, no albumen was found at any time. In fact, the very worst cases are those in which eclampsia appears without a sign of albuminuria.'' He endorses the theory of Dr. Marx, above quoted, and says: ''Repeated and careful examinations have shown that there exists a close relationship between the amount of urea eliminated and the development of toxin poisoning.''

In view of the positive and well-founded opinions of Dr. Marx, it is very important that estimates of urea be made in these cases to determine whether it may be the offending and toxic substance or not. If his statements should be proven true, it will be a great step in advance, and will enable us to more successfully combat a much-dreaded foe. I earnestly commend it to your consideration, and hope that investigations on this line will be made in every case.

A question of momentous importance presents itself to every pregnant woman who, with rapidly advancing blindness, weighs the situation calmly. She may have one or more small children, who demand and are entitled to her care and attention. She must also consider her husband, who is liable to have a blind and helpless wife unless she gets relief. There is also a menace to her own life, for we know too well how often convulsions come on before full term has been reached, and she has to pay the dread penalty. This is a very serious aspect of the question, and should be weighed very carefully in giving advice. Is the life and sight of the mother of more importance than the unborn child or not?

The time when retinitis comes on varies very greatly. It may occur as early as the second month, and, again, not until the seventh or eighth month. The earlier it comes on the more unfavorable the prognosis as to sight.

Premature delivery in not indicated in all cases by any means. Where it comes on late, every effort should be made to tide over the period, at least until the child is viable. Much will depend upon the condition of the retina. Where the retinitis is severe, involving both eyes, as it generally does, and where sight is seriously impaired, the chances of total or almost total loss of vision are very great. In the first case I here reported there was a retinitis pure and simple, without any involvement of the nerve head. Here any interference would have been unwarranted. Generally the nerve head is involved more or less, and we have a neuro-retinitis. In the second case there was a neuro-retinitis with numerous exudations scattered over the entire fundus, with hemorrhages in the retina. The macular region was so much involved that central vision was seriously impaired, as well as the peripheral. With nearly three months more to run, it seemed more than probable that before normal delivery could take place the sight would be practically destroyed. In these cases the optic neuritis is followed by atrophy.

In the third case a miscarriage was brought on during the pregnancy, and the result was favorable, both to the sight and the life of the patient. Had this not been done, in all probability her sight would have been seriously damaged. It is to be remembered that the impairment of vision is not always a guide to the extent to which the retina is involved. If the macula is not attacked, there may be extensive invasion of the retina by the disease and yet central vision remain good. I had a striking example of this a few years ago in a gentleman who had chronic Bright's disease and marked retinitis, but the macular region was not involved, and his central vision was excellent. Patients do not complain of their eyes until the central portion of the retina is invaded, and failing sight is often the first warning that the patient has that the kidneys are diseased at all.

The prophylaxis in these cases is plain enough. Every physician who agrees to attend a confinement should at intervals examine the urine. If albumin is detected, proper hygienic and internal treatment should be instituted and carried out. This disease often occurs in women who are apparently in excellent health. Œdema of the limbs is not always present. Headache, which is one of the prominent symptoms, is not always severe, and is often attributed to gastric and intestinal disorders or to her pregnant condition. Constipation should be relieved by mild laxatives, enemata and properly regulated diet. If there is a diminished excretion of urea, proper therapeutic and hygienic measures should be instituted to restore the usual quantity.

My conclusions are:

1. The urine of pregnant women should be examined at intervals for albumin, and the quantity of urea should be estimated.

2. Even slight visual disturbances should be followed by an ophthalmoscopic examination of the eyes.

3. When there is a well-marked neuro-retinitis in the earlier period of pregnancy, up to the end of the sixth month, the prognosis for sight is unfavorable.

4. When the retinitis comes on in the last three months of pregnancy every effort by suitable internal and hygienic treatment should be made to tide the case over to maturity.

5. The occurrence of convulsions with retinitis is an indication for interference.

CORRESPONDENCE.

Editor AMERICAN JOURNAL OF OPHTHALMOLOGY:

Dear Sir:—In the AMERICAN JOURNAL OF OPHTHALMOLOGY, September, 1902, there appears an abstract of an article published by me in the *Therapeutic Gazette* for July 15, entitled "The Supra-Renal Gland and Its Preparations in Ophthalmic Practice." In this abstract I am made to say that I have found the suprarenal preparations of value in the treatment of a number of affections, for example, blepharospasm, spring catarrh, trachomatous pannus and vascular keratitis. Now, in point of fact, I was most particular when summarizing the advantages which have been claimed for these preparations, to state that this summary resulted from an examination of the published literature, and wherever possible I placed in brackets the name of the author who recommended the suprarenal gland or its preparations for any particular condition, quoting thus: Radziejewski, Perret, von Reuss, Darier, Bates and Reynolds. I expressed my personal views as follows: "Many surgeons, like Adolf Alt, for example, who have largely used adrenal preparations, while perfectly agreeing in regard to their remarkable effect in producing anæmia of mucous membranes, have failed to observe any therapeutic value. This has been my own experience; that is to say, the gland preparations or principles do not seem to be curative in the true sense of the word, although there can be no question that they favorably modify diseased processes under certain circumstances and are of great value in aiding the action of other remedies, or, more accurately, in paving the way for their action." I shall be much obliged to you if you will publish this letter, and correct by its publication the impression which your abstract gives that I am a believer in the therapeutic value of adrenal preparations in a number of diseased conditions, in some of which I have not even used the remedy and in others of which I have seen it signally fail.

Yours very truly,

G. E. DE SCHWEINITZ.

MEDICAL SOCIETIES.

THE SEVENTIETH MEETING OF THE BRITISH MEDICAL ASSOCIATION.*

Held at Manchester, July 29th to August 1st, 1902.

SECTION OF OPHTHALMOLOGY.

DR. GLASCOTT, Senior Vice-President, in an opening address, announced that the President had unfortunately been prevented by illness from attending the meeting, and sketched the progress of ophthalmology in Manchester.

MR. MARCUS GUNN then opened a discussion on "Functional Derangements of the Eye," and described in detail the various symptoms connected with these cases, and gave also descriptive cases.

MR. HOLMES SPICER described a case illustrating the pupil reactions.

MR. MCGILLIVRAY said that in Dundee these cases were exceedingly rare.

MR. HILL GRIFFITH thought that when one was certain that the case was a genuine one there was not much difficulty in deciding whether it was functional or organic.

MR. DOYNE described a case due to injury, which ultimately turned out to be one of tobacco amblyopia in addition.

THE PRESIDENT thought that in England these cases were not so uncommon as most people thought, and described a case in which there was no perception of light, but which recovered with a placebo.

DR. KARL GROSSMANN described a case of ivory exostosis of the orbit upon which he had operated and had observed for eighteen years. He showed the large masses of bone removed, and also the patient.

MAJOR M. T. YARR, R.A.M C., described two cases of indirect gunshot wounds of the eyes which he had seen in South Africa. In one case the man was shot through the face, and, in spite of there being no injury to the orbits, yet a condition very like retinitis proliferans was produced. In the second case pigmentary changes about the macula were the only causes seen to account for defective vision.

---

*British Medical Journal.

Mr. Bishop Harman mentioned cases due to the concussion from an exploding shell.

Mr. Lee described two cases he had seen.

Dr. J. A. Menzies described some cases of detachment of the corneal epithelium, and gave a sketch of the literature as well as of several cases. He recommended for their treatment removal of the loose epithelium and scraping of the surface of the cornea.

Mr. Devereux Marshall objected to the use of cocaine.

Mr. Simeon Snell had performed peritomy with good effect.

Mr. Holmes Spicer thought the disease was herpetic in origin. In one case he had done iridectomy with good effect.

Mr. Doyne dreaded these cases, as relapses were so frequent. He had done iridectomy, but preferred the galvanocautery.

Mr. McGillivray had one patient who, although she did not suffer from myxœdema, yet kept free from relapses so long as she took thyroid extract.

Mr. Harman had seen a similar condition in fishes.

Mr. Charles G. Lee read notes on some cases of monocular neuritis. He thought that the cause was local and not general.

Mr. Hill Griffith and Mr. Doyne thought that most they had seen were due to a retro-ocular neuritis.

Mr. Simeon Snell described a "Method of Suturing the Tendons After Enucleation of the Eyeball," as this produced a more satisfactory stump.

Mr. Ernest Clarke and Mr. E. Roberts also described methods they had introduced.

Dr. Karl Grossmann thought that the introduction of glass balls was unsatisfactory, as they so frequently came out later on.

Dr. Edridge-Green proposed a resolution on the Holmgren test for color-blindness, which was not carried.

Thursday, July 31st.

A discussion on the "Treatment of Sclero-Keratitis" was opened by Dr. A. W. Sandford. He discussed the etiology of the disease, and for treatment he thought that the hypodermic injection of pilocarpin was very useful. For most simple cases myotics were better than mydriatics. He had not seen much of the treatment by means of subconjunctival injections; at any rate, he had seen no better results from this than from other methods of treatment, while the reaction produced was often very much greater than desirable.

DR. MADDOX thought that the dry heat was the most useful; this, however, was difficult to apply by the ordinary methods. For this purpose he had made a fine coil of tinned wire sewn on to flannel. This was connected with an accumulator or through a transformer to the main, and could be worn for any number of hours.

DR. HILL GRIFFITH thought Dr. Sandford was optimistic. He thought these cases most intractable. He was not hopeful of the action of any drugs or of the operation of peritomy.

MR. DEVEREUX MARSHALL believed that in nearly all cases atropine was the best drug to use locally, as at least a blotched pupil would properly be avoided, whereas if myotics were used this would be likely to add to the complications of the disease.

MR. WRAY considered that atropine should be pushed in the form of ointment used after cocaine.

MR. W. WATSON GRIFFIN described a case, and MR. HARMAN mentioned a case in which adrenalin was used, and although it greatly improved the appearance of the eye, yet it caused pain and diminished the vision, though there was no increase of tension.

DR. CLEGG said he chiefly used 1 to 6 per cent. of yellow ointment.

DR. GLASCOTT said he chiefly relied on mercury and atropine ointment locally, and the correction of the refraction was most important.

DR. SANDFORD, in reply, said that in many cases atropine was indicated, but he thought the hypodermic injection of pilocarpine was very useful. He did not think that peritomy was very useful.

PROF. J. WIDMARK demonstrated Martin Janson's siderophone for the detection of iron within the eye.

MR. C. WRAY read an elaborate paper on "Civilization and Eyesight."

This was followed by another paper by PROFESSOR WIDMARK on the "Etiology of Myopia."

Dr. Maddox discussed both papers.

Colonel E. F. Drake-Brockman gave his experience in India, in which with the increase of study in the colleges there was a very large increase in the number of cases he had to treat for myopia.

Dr. Hill Griffith congratulated Mr. Wray on his paper. His experience was that cases of hypermetropia remained as such, and did not develop into myopia.

Mr. Doyne said he was astonished to hear Dr. Griffith's experience. He thought it was the commonest thing to see hypermetropic cases become less so or even myopic.

Mr. Story suggested that there always were plenty of myopic cases in India, but that, until they came to study much, it was neglected.

Mr. McGillivray was convinced of the tendency there was for hypermetropic cases to become less marked.

Mr. Holmes Spicer also agreed.

Mr. Wray replied.

Dr. D. McKeown read notes of a case of ulceration of the cornea of an intractable nature. Also notes of a partial dislocation of the lens, in which he had needled both. In one the lens had become opaque, and in the other it had absorbed. Good results were obtained in both cases.

Friday, August 1st.

Dr. James Taylor opened the discussion on the "Rarer Forms of Optic Atrophy." He went into the question of atrophy occurring in general paralysis, disseminated sclerosis, toxic amblyopia, pressure on the chiasma, hemiplegia, and in various anomalous cases without any obvious cause. He thought that there was a great tendency to assume that every case occurring in smokers was of a toxic nature, whereas many so-called toxic cases were really caused by the early stages of some disease of the central nervous system. In all such cases the urine should be examined, for certainly diabetic patients seem especially liable to get amblyopia when little or no tobacco was used.

Mr. Holmes Spicer had also noticed and recorded cases occurring in diabetes; he thought that it was most difficult to get some men to own up to smoking in excess, and he really thought that many of the cases in which no history was obtainable were due to this fact.

Dr. Emrys Jones mentioned those rare cases of atrophy associated with flow of fluid from the nose. He quite agreed with Mr. Spicer as to the difficulty of obtaining satisfactory histories.

Dr. Hawthorne said he would not diagnose atrophy by the appearance of the disc alone, but the vision and fields also should be taken into consideration.

Dr. Bronner thought the color fields were most important.

Dr. Newton Pitt said that the pathology had not been worked out, for seldom if ever had a case, which had been seen and examined clinically, been examined later on pathologically.

Mr. Parsons said that several had lately been fully examined.

Dr. Clegg thought that the color of the disc gave but very little information as to the amount of atrophy.

Mr. Harman was of opinion that the degeneration started from the retina and traveled backwards.

Dr. Hill Griffith had seen many toxic cases in women due to tobacco. Females were especially liable to be affected by the drug.

Remarks were also made by Dr. McGillivray and Dr. S. Lodge.

Dr. Taylor briefly replied.

Dr. Sam Lodge read a paper on "New Vasomotor Disturbance of the Eye," in which there was a transitory œdema of the eyelids, dilatation of the episcleral vessels, and enlarged thyroid, occurring in neurotic subjects. He showed photographs and described cases.

Mr. Parsons gave a lantern demonstration on degeneration in the optic nerve produced experimentally in monkeys as the result of injury to certain parts of the retina.

Dr. Adolph Bronner read notes of forty cases of high myopia in which the lens had been removed. He greatly advocated the operation, and had had excellent results even in those in which only one eye was myopic with signs of amaurosis, while the other was normal. He had seen detachment of retina follow in some cases.

Mr. Devereux Marshall thought it a very risky thing to operate in monocular cases with a normal eye on one side, for sympathetic inflammation was still possible, even if it were rare; and he could not see what benefit the patient would derive from the operation.

Mr. Hill Griffith had seen glaucoma come on after a secondary needling of the capsule in these cases.

Mr. Spicer had had gratifying results, though these patients did not seem to get on so well with both lenses removed as when only one was touched.

Mr. Ray wondered if some of these gratifying results were not obtained in eyes which really had posterior lenticonus and not true myopia. He had operated on such with great benefit.

Mr. Lee also spoke.

Dr. Bronner replied.

Dr. Edridge-Green proposed that a committee be appointed to inquire into the best methods for testing for color blindness, as he considered the Holmgren test most unsatisfactory.

This was seconded by Dr. Lodge and carried.

FIFTY-THIRD MEETING OF THE AMERICAN MEDICAL ASSOCIATION.*

Held at Saratoga Springs, N. Y., June 10 to 13, 1902.

SECTION ON OPHTHALMOLOGY.

(Continued from last issue).

FOURTH SESSION.

Address of Chairman of Committee on Exhibit of Early American, British and Colonial Ophthalmologic Literature.

Casey A. Wood (Chicago) said it was impossible to divorce ophthalmic from general medical literature. The Greek schools derived much of their knowledge of ocular therapeutics from the Egyptians; in the ancient Nile region there were "eye doctors." From the Greek school the Roman oculists arose, followed by the Arabian ophthalmologists. He referred to the work of Bartholomew Traheron (1543), in which cataract was referred to as a "slimy humor coming about the apple of the eye." The first separate and complete treatise on the eye in English was by Richard Banister, who early observed the hurt done to inflamed eyes by the application of astringent remedies. In the exhibit is a first edition of Newton's book which played an important role in the knowledge of ophthalmology. One of the best known surgeon oculists of the eighteenth century was Thomas Woolhouse, followed by his pupil, John Taylor; the former was the author of many books on the eye, and the first to suggest the possibility of making an artificial pupil. In 1759 William Porterfield published his masterly treatise on the eye, and in 1743 William Rowley published a work illustrated by plates made from engravings on steel and copper. John Ware, who died in 1816, wrote many books on ophthalmology. At first the British and French ophthalmologists were best known, but were shortly eclipsed by the German surgeons. Then appeared that greatest of all text-books by Wm. Mackenzie. The first complete work published in America was by John Saunders, who was the first to establish a hospital for eye diseases. The first text-book by an American writer was that of Geo. Frick. Americans early begun to push forward the car of ophthalmologic progress. Isaac Hays, the first editor of the *American Journal of Medical Science*, was a voluminous writer on ophthalmic subjects. The first Canadian treatise was by Henry Howard of Montreal, in whose work there is a description of removal of a cataract with an arrow-headed knife. In concluding, Wood called especial attention to the excellence of the text-book by Wm. Mackenzie and said there was not to-day a more accurate account of external diseases of the eye.

---

*American Medicine.

NEUROEPITHELIOMA RETINÆ (GLIOMA), WITH REPORT OF CASES; ILLUSTRATED.

C. R. HOLMES (Cincinnati) reviewed the history of the subject and considered the question of whether or not this class of tumors should be classified with the sarcomas. He considered the macro- and microscopic appearance and differential diagnosis. He said no case had yet been recorded where the disease had traveled from one eye to the other—that although both eyes are affected in a large percentage of cases, the disease starts independently in each eye, a fact he considered of interest inasmuch as it would argue in favor of double enucleation to preserve life if performed early. He then discussed several cases in detail.

Discussion.—KNAPP (New York) reported three cases bearing on the subject.

WEEKS (New York) spoke of the involvement of mesoblastic tissue in these tumors and thought the term gliosarcoma particularly applicable.

AYERS (Cincinnati) referred to a case in which nine years had elapsed since the enucleation and patient was in good health.

BAKER (Cleveland) spoke of the difficulties of diagnosis, and said several weeks ago he had enucleated an eye which he and several other oculists had called glioma, but which the pathologist said was not glioma.

JACKSON (Denver) referred to a case he had had recently in an adult where the appearances were such that had it been a child he would have been led to make a diagnosis of glioma.

PYLE (Philadelphia) spoke of a case in which diagnosis of glioma had been made and on enucleation it was found to be a subretinal cysticercus.

RISLEY (Philadelphia) said there was often great difficulty in diagnosis and the child should be given the benefit of the doubt always.

DETACHMENT OF THE RETINA.

R. L. RANDOLPH (Baltimore) had been impressed with the results obtained by Dor, Winselmann and others with subconjunctival injections of salt solution, and recited two cases in which he had put the treatment to the test, and in which it was undoubtedly beneficial. He thought the tendency of the method was to do good.

Discussion.—HOLMES (Cincinnati) spoke of the operative treatment of these cases, and said the results had not been very brilliant.

KNAPP (New York) spoke of the benefit of irodectomy in secondary complications, and said the eye might often be preserved with partial detachment.

Risley (Philadelphia) thought the salt injections had a tendency to do good, and said he had seen the retina reattach itself, but that always the detachment recurs.

THE DISAPPEARANCE OF OPACITIES OF THE CRYSTALLINE LENS.

Walter Pyle (Philadelphia) briefly reviewed a previous paper on the spontaneous disappearance of senile cataract, and spoke of the artificial production and dissipation of lenticular opacities and of the disappearance of opacities after traumatism. He said there is no question of the authenticity of many reports of the spontaneous disappearance of senile cataracts; that it is not uncommon for opacities as a result of traumatism to disappear, even when the capsule has been penetrated. He said too much stress could not be laid on the value of personal hygiene, treatment of local disorders, careful refraction and proper use of the eyes in arresting the progress of incipient cataract; in certain cases secondary to nutritional disturbances, opacities might disappear under proper treatment. The non-operative treatment of cataract, as practiced by charlatans and irregular physicians is worthless, dangerous and consists of no beneficent measures not known and properly used by all reputable oculists.

Discussion.—Black (Milwaukee) reported for Würdemann three cases of lenticular opacities which were absorbed or greatly improved by treatment, which consisted of rest, atropin, alteratives—mercury and arsenic—and regulation of diet.

Taylor (Wilkesbarre) said that undoubtedly many cases remain stationary or vision slightly improves, and that in some cases the opacities do entirely disappear.

Appleby (St. Paul) recited a case in which opacity of the lens produced by a foreign body had cleared up and the patient had vision of $^{20}/_{30}$.

Standish (Boston) said the cases of injury by foreign body followed by clearing up of the opacity were only when the foreign body was exceedingly small and the wound a minute one; when a lacerated wound is made the lens is doomed.

FIFTH SESSION.

THE ANATOMY OF THE OCULAR MUSCLES AND THEIR ACCESSORY STRUCTURES.

J. ELLIOT COLBURN'S (Chicago) observations were based upon the study of two hundred cases examined for errors of refraction. He said the size and mobility of the eyes seems to vary with the size, shape and position of the orbital cavity and its relation to the plane of the face; there is a direct relation between the angles of the base of the orbits and the facial plane. He considered three types, the emmetropic, hyperopic and myopic. The orbital apices were nearer together in the myopic type. The facial plane was determined by a line drawn through the attachments of the tendo oculi and orbic. palp.; the plane of the base by drawing lines from these points to outer angles of orbits. He considered the anatomic differences in the development of special types. Hyperphoria occurs most frequently in unsymmetrical orbital planes, the direction of the error following the most marked displacement.

THE PHYSIOLOGY OF THE OCULAR MUSCLES.

E. C. ELLETT (Memphis, Tenn.) referred to the planes of reference and rotation and axis of rotation, and spoke of the need of a definite and accepted nomenclature of the ocular movements, with suggestions for such a table. He said that rotation about the anteroposterior axis never occurs in a normal eye, and that "false torsion" does not exist.

PRINCIPLES CONTROLLING OPERATIVE INTERFERENCE IN HETEROPHORIA.

E. J. GARDINER (Chicago) advised thorough examination of the patient and exclusion of errors of refraction with repeated tests of muscular imbalance with careful regard for the power of each muscle. Correction of the ametropia and anisometropia may be all that is required. It should be determined whether the defect depends on the predominance of one muscle, or upon weakness of the opposing muscle and whether the condition is inherent or induced. He thought orthoptic exercise and electric treatment should precede operative measures. He said if in doubt don't operate.

PRINCIPLES CONTROLLING NON-OPERATIVE TREATMENT OF HETEROPHORIA, INCLUDING THE USE OF PRISMS AND PRISM EXERCISE.

S. C. AYERS (Cincinnati) spoke of the frequent occurrence of heterophoria in girls and boys who are physically not well developed, but are often strumous and ill-nourished; in girls just before the menstrual function develops and in boys about puberty. He said more regard should be paid in the public and private schools to the differences in physical and mental vigor. Much can be accomplished by the correction of the ametropia, the judicious use of prisms and freeing them from the restraints and exactions of school life. Operative measures should not be resorted to until all other resources have been exhausted. We cure esophoria and convergent strabismus by proper adjustment of glasses, though it takes months and years to do it. We should give the weak interni the same chance we give the weak externi.

Discussion.—RISLEY said that it came down to this, that the man who got the best results was the man who had the widest knowledge and best judgment, and referred to the importance of taking into consideration the various reflexes, and cited various disorders as causative, pelvic troubles being a frequent factor.

BATES (New York) called attention to the value of the tropometer in these cases.

THE PRINCIPLES CONTROLLING OPERATIVE INTERFERENCE IN STRABISMUS.

EDWARD JACKSON (Denver) said that two kinds of structures share in determining the positions of the eyes—neuromusclar and connective tissues. The latter may determine the position for a time, but the former ultimately predominate. The capacity for hypertrophy under the proper nerve influence is the most distinctive characteristic of muscular tissue. Hence a muscle is too strong or too weak, according to the nerve impulses it receives. The function of a particular eye muscle is not to effect a single movement of the eyeball, but to take an appropriate part in almost every ocular movement. Its importance as a secondary rotator in effecting certain movements comes to its importance a primary rotator for other movements. He then considered the various operations for the correction of strabismus.

PRINCIPLES CONTROLLING THE NON-OPERATIVE TREATMENT OF STBABISMUS.

GEORGE M. GOULD (Philadelphia) refers to his suggestion, made in 1893 at the Pan-American Medical Congress, and more fully set forth in articles in the *Medical News* of October 4, 1893, and November 18, 1892, that heterophoria is an innervational disease, and that therefore surgery is not applicable or genuinely curative. A reaction against operation has taken place, and a similar one is looked for as to operation in strabismus, because strabismus is preceded by heterophoria, during which it is curable without operation. Chronic or permanent strabismus is also preceded by a stage of acute, functional or incomplete strabismus, during which the reinstatement of binocular vision without operation is not impossible. The peripheral mechanism in strabismus is not primarily at fault. All myology resolves itself into neurology. The non-operative treatment consists in:

1. Prophylaxis.
2. The treatment of ametropia.
3. The treatment of heterophoria.
4. The treatment of amblyopia.
5. The treatment of physiologically curable strabismus.
6. The treatment of alternating strabismus.
7. The treatment of anomalous cases.
8. The treatment of incurable cases.

Prophylaxis consists in instruction of the public and of the parents as to the prevention of strabismus by placing the care of the child in the oculist's hands from the age of one year on. Anisometropia and strabismus are the two great causes. Glasses from about the age of two years will prevent strabismus. They can be prescribed by retinoscopy alone. The treatment of heterophoria was descibed in the author's paper before the section last year, and the treatment of amblyopia in the *Medical News* of December 31, 1892. All cases are physiologically curable if taken in hand early enough. The treatment of alternating strabismus is exceptional, and in anamolons and incurable cases operation is not advised, as the results are not real and permanent cures.

Discussion.—Black (Milwaukee) spoke of the non-development of the fusion center as a factor in these cases, and said it was well to first find out the degree of fusion of the eyes, and then proceed to refraction under mydriatics. He then referred to the value of the ambuloscope.

Stevenson (Akron) said the first thing to be done was to determine the conditions at rest, and said the great reason we had so much trouble with the external ocular muscles was due to the amount of close work and the convergence necessary. We should not only use the Maddox rod for distance, but should determine the condition of near work, too. He had used the ambuloscope with considerable success.

Valk (New York) did not think it would be proper to condemn a pretty child to go on for years with one eye turned in, with the hope that some day by exercise it would turn out properly. It is not fair to the child.

Risley (Philadelphia) said binocular vision was a matter of experience: it is acquired as are other things in life. He could relate many instances of persons removed from invalidism by tenotomy, after other means had been exhausted.

Gardner (Chicago) believed there were many cases in which nothing short of tenotomy would be of benefit.

Jackson (Denver) said the elasticity of the muscles on a given day might depend upon the innervation of preceding days; they vary in their length and in their strength. He thought there was no more reason to suppose that the excessive action of the internal rectus, for instance, is related to some peculiar shape of the bones of the orbit than to suppose that thickness of the biceps is due to the shape of the humerus.

(Continued in next issue.)

ABSTRACTS FROM MEDICAL LITERATURE.

By W. A. SHOEMAKER, M.D.
ST. LOUIS, MO.

SOME CONSIDERATIONS ON THE HYGIENIC AND PROPHYLACTIC TREATMENT OF MYOPIA.

Alexander Duane, (*New York Medical Journal*, June 8) makes the following points:

1. Making the patient employ the full correction of his myopia all the time, both for distance and near. This is of prime importance in all varieties of myopia, low, medium and high, and, if applied early, may check the progress of the myopia altogether.

2. Proper attention to illumination, the size and legibility of the print, the quality of paper used in the books read, the relative height and disposition of the seat and desk, and the many other factors that have been brought out by the zealous investigators into the subject of school hygiene. These are important but subsidiary matters.

3. In low and medium myopia, moderate restriction of near work, or rather its better distribution, so that it is done mainly by daylight and not for too long at any one time. Furthermore, momentary rest of the eyes at frequent intervals during the work. These rules to be the more strictly enforced the higher the myopia and the younger the patient.

4. In high myopia with evidences of progress, much more stringent restriction of near work. Open-air work to be encouraged and the adoption of confining and eye-taxing occupations forbidden.

5. In medium and especially in high myopia, plenty of sleep and out-of-door exercise.

6. Re-examination of the patient at frequent intervals (which in the case of high myopia should be very frequent), to determine how much the myopia has increased. If it has increased, the glasses should be increased also up to the full strength, and the hygienic regulations above detailed modified accordingly.

IMPLANTATION OF A GOLD BALL FOR BETTER SUPPORT OF AN ARTIFICIAL EYE.

L. Webster Fox, New York, (*Medical Journal*, January 18th), recommends his last operation and gives the technique as follows: If operation is to be performed on the right orbit, the eyelids are kept apart by a speculum, the conjunctiva is then grasped up and in above the inner canthus and the tissues are well pulled out. He then passes a Beer's knife or a curved keratome through the tissues, somewhat obliquely and well down into the orbit; this opening must be made large enough to push the globe in the space behind the tissues, conjunctiva, etc. This starts the opening which he enlarges with curved scissors, separating the tissues from the cellular tissues around the orbit, thus giving him a large pouch into which the globe can be inserted. He uses at present a gold ball of 11, 12, 13 and 14 mm. in diameter. The gold ball is inserted through the opening and retained in place by a shell which has to be modeled after an artificial eye and which he calls a "conformer." He has chosen three sizes for various orbits. He closes up the incision with two stitches and then places the conformer over the buried ball, and by gentle manipulation on this metal rotates the ball into place. The circular opening in the conformer allows the gold ball to fit the space which will be covered by the cornea of the artificial eye. The eyelids are then closed over the conformer which is left in place 24 hours. The eyelids also help to keep the ball in place. The conformers are made of metal gold plated. He states that the results obtained by this method are perfect; no secondary trouble follows, all healing up by first intention, and the two stitches are taken out the third day. If the operation is to be performed on the left orbit the incision is made up and out above the external rectus muscle and the dissection carried out as described above.

WHOLESALE IMPORTATION OF TRACHOMA.

Eighty-five cases of trachoma were found among the steerage passengers of the French liner steamship La Gascogne and the Red Star liner Zeeland, which recently arrived at the port of New York. The persons affected were mostly Syrians, Roumainians and Austrians. The only penalty for such importation, at present, is deportation at the expense of the lines, but under the proposed new emigration act, which, unfortunately, has not yet become a law, a large fine may be imposed upon any company bringing diseased passengers to this port.

SIX CASES OF EPILEPSY DUE TO AMETROPIC EYE STRAIN.

Geo. M. Gould (*American Medicine*, July 5) does not agree with those who believe that muscular imbalance can cause epilepsy. He does believe that ametropia is occasionally the cause, and cites six cases in which prompt relief from all symptoms was experienced as the result of wearing the proper glasses. In addition to these cases the author has given partial relief to a great many cases, especially of petit-mal. His conclusions are as follows:

1. That undoubtedly eye strain is not the most common, and perhaps it is a relatively uncommon cause of the disease.
2. That however seldom it may be the cause it should not be neglected, on account of the terrible mystery and incurability of the dread affection.
3. That the relief of eye strain is far from certain by the prescribing of glasses, even by the most reputable of oculists, because there are a hundred ways in which the prescription may not be correct, the glasses improperly worn, or the ametropia quickly changed.

INSERTION OF A RABBIT'S EYE WITHIN THE CAPSULE OF TENON.

Felix Lagrange (*Annals d' Oculistique*, March and November, 1901) reports eleven cases in which he has performed this operation, and gives a photograph of one. In ten cases no trouble was experienced; in one the eye selected was from an old rabbit and was too large for the capsule. The author considers his method of prosthesis the best yet suggested. He recommends:

1. That, as each rectus is cut, a thread be passed through it to prevent its retraction.
2. Following enucleation, that the eye be not inserted until all hemorrhage has ceased.
3. That an eye of a young rabbit be selected.
4. That the opposite muscles be drawn into apposition by appropriate sutures.

5. That the sutures in the conjunctiva be close together and be allowed to remain a week.

6. That the most careful antisepsis be carried out.

REMOVAL OF GUNPOWDER STAINS.

E. G. Corbett (*The Medical World*, February, 1902) has succeeded in removing gunpowder stains from the conjunctiva and cornea, by first removing the powder and then using a fifteen per cent. solution of hydrozone in the eyes. (How often it was used the author does not state). For the face he uses a fifty per cent. solution applied constantly. This he uses for two weeks, and then paints the parts twice daily with equal parts of hydrozone and glycerine until all stains are removed.

EMPYEMA OF THE ANTRUM OF HIGHMORE WITH PTOSIS AND DIPLOPIA.

Heber Nelson Hoople (*Medical Record*, June 28) reports the case of a draughtsman, aged 21, and previously healthy, who, on account of poor vision, was almost completely disabled. Examination revealed incordination of the extrinsic eye muscles, diplopia, impaired vision, impaired accommodation and double ptosis. The antrum of Highmore was found full of pus; it was drained and properly treated. All eye symptoms promptly disappeared.

MISCELLANEOUS.

THE ORIGIN OF A VISUAL IMPULSE.

By F. W. EDRIDGE-GREEN, M.D., F.R.C.S.

The following remarks were made at the Section on Physiology of the recent meeting of the British Medical Association:

Dr. Edridge-Green said that light falling upon the retina liberated visual purple from the rods, and a photograph was formed. The decomposition of the visual purple by light chemically stimulated the ends of the cones, and a visual impulse was set up, which was conveyed through the optic nerve fibres to the brain. He assumed that the visual impulses caused by the different rays of light differed in character just as the rays of light differed in wave-length. In the impulse itself we had the physological basis of light, and in the quality of the impulse the physiological basis of color. He assumed that the quality of the impulse was perceived by a special perceptive centre. Color was, according to this hypothesis, a point of difference perceived by a special centre independent of the visual centre, but closely connected with it.

He had examined the retinæ of several monkeys, and found visual purple in the yellow spot, which changed color when exposed to light. It was exceedingly difficult to see the visual purple in the yellow spot, except under a microscope, because of the very bright yellow pigment which pervaded it. The fact which had always prevented the visual purple from being accepted as the visual substance was that it had not been found in the cones, and that the most sensitive part of the retina, the fovea, contained only cones. But, according to the hypothesis which he proposed, it would be essential that there should be no visual purple in the cones, as these were sensitive, not to light itself, but only to changes in the visual purple. He had made many experiments to show that light might fall upon the fovea without producing any sensation whatever. Helmholtz mentioned the fact, and also stated that it was remarkable that a perceptible interval elapsed before we saw with the yellow spot, the fovea being the last point to convey a sensation of light. This would be explained by the diffusion into the yellow spot of the visual purple. All the facts of color-mixing, contrast, and after-images were consistent with the hypothesis that the visual purple was the visual substance.

He then passed to the perception of color by the brain, and this portion of the hypothesis was supported in the minutest particular by the facts of color blindness. Cases of color blindness might be divided into two classes. In the first class there is light as well as color loss; in the second class the perception of light was normal, but there was a defect in the perception of color. Both these classes were represented by analogous conditions in the perception of sounds; the first class by those who are unable to hear very high or very low notes; the second class by those who possess what is commonly called a defective musical ear.

All the facts pointed to the view that the sense of light was developed first, and then the sense of color, those rays which differ most physically being the first to be differentiated. In the course of evolution all the varieties of psychophysical color blindness have been passed through.

The existence of a separate color-perceiving centre was supported by many pathological facts; several cases had been reported, in which the perception of color was abolished, whilst the perception of form and light remained unaltered. All objects appeared of different shades of gray, as in a photograph. In each case disease of the brain had been found. A similar condition could be produced by hypnotism. He had examined a case of general paralysis, in which the color vision became more defective as the disease progressed: also a girl who had become totally color blind, apparently from cerebral disease. Her color-perception slightly improved, and then she was able to recognize the extreme red and violet with one eye and red and blue with the other, the intermediate colors with both eyes being seen as gray. Violet was non-existent either as color or light to the eye which saw red and blue.

It was obvious that if the theory of the omission of a set of fibres did not explain the facts of color blindness, tests based on this assumption must fail to be efficient. This, indeed, was the case; no fewer than six varieties of the color blind might escape detection by Holmgren's test, and three of these varieties were dangerously color blind. In addition to this, a great many normal-sighted persons were rejected by this test. Of those who appealed from the decision of the Board of Trade, no less than 38 per cent. one year and 42 per cent. in another were found to have been rejected wrongly. The inefficiency of Holmgren's test was well known to all medical experts on the subject, in fact, none of his recent papers had met with any opposition, but were confirmed even by those who previously opposed him.—*Brit. Med. Jour.*

THE AMERICAN JOURNAL
OF
OPHTHALMOLOGY.

VOL. XIX. NOVEMBER, 1902. No. 11.

ORIGINAL ARTICLES.

A THIN FIXED MEMBRANE, PROBABLY CONGENITAL, SPRINGING FROM THE RETINA INTO THE VITREOUS AND COVERING THE OPTIC DISK.

BY SWAN M. BURNETT, M.D., PH.D.
WASHINGTON, D. C.

MEMBRANES in the vitreous of a congenital kind, or at least not the result of any demonstrable pathologic process, are, aside from the remains of the hyaloid artery, of rare occurrence. In the *Ophthalmic Record* for January, 1897, I published an account of a case of this nature, in which the membrane arose from the optic nerve, and, passing forward, was lost in the depths below the lens. The media and the fundus were otherwise normal, but vision was reduced to the ability to discern large objects. There had been a tendency on the part of that eye to turn in since infancy, and there was now no power of fixation.

Quite recently another case of somewhat analogous character came under my observation, which, I believe, has sufficient interest to warrant it being placed on record.

It occurred in the person of a physician, 34 years of age, who has used his eyes for rather close study all his life. He has also used his right eye for target practice, though he thinks the eye has never been so good for distant vision as the left. So far as he knows, there never has been any injury or other pathologic process in that eye, and the cause of the present examination was some pain in the eyes after prolonged study, and due, no doubt, to his refraction error which had never been corrected. The right eye was under mydriasis when I first saw him, and $V = {}^{5}/_{20}$. There was a corneal astigmatism 1 D. obliquely placed, as shown by the ophthalmometer, and the shadow test gave about the same amount of myopic astigmatism. With —1 ax. 135° $V = {}_{5}/_{10}+$.

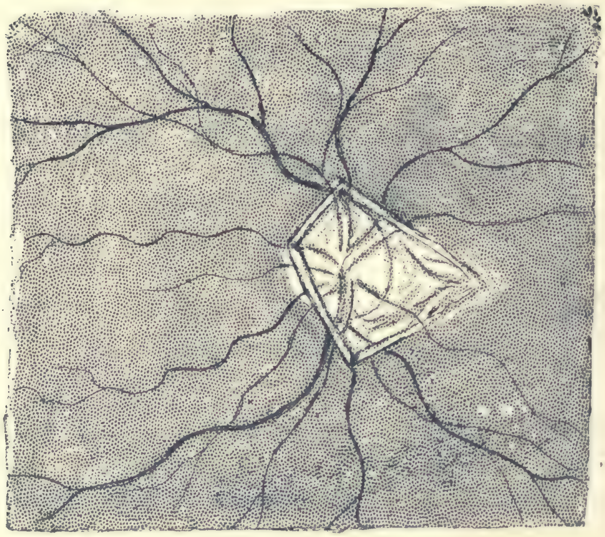


FIG. 1.

In the left eye, $V\ {}^{5}/_{6}$, which, with —0.5 ax. 90°, was increased to ${}^{5}/_{5}$. The media in the right eye were all clear, and the fundus showed no change from a normal condition, save a thin veil which covered the whole of the optic disk, except a small segment down and out, and some surrounding space above, below and to the nasal side. This veil has the form of a quadrilateral of unequal sides and angles. The two temporal sides and the adjoining portions of the sides above and below were straight and as clearly cut as a knife edge.

These edges curled over for a short distance and the corners corresponding to the angles were nicked. The upper and lower edges tended to a point, but gradually faded away into the surrounding tissue at about one disk diameter from the nasal edge of the disk and slightly below. The film was not floating and lay either on the disk or only a short distance in front of it. Through this film all the vessels on the disk could be seen, but with blurred outlines. As soon as they appeared from under its sharp edge they stood out with normal distinctness. There was nothing abnormal as to their size or course, except that the veins coming from the macula lutea region seemed a little more tortuous than normal. (Fig. 1). A careful examination of the visual field revealed a considerable restriction to the temporal side, and the "blind-spot" was somewhat larger than we usually find it, being about 10° in diameter, whereas, commonly it does not measure more than 6°. (Fig. 2).

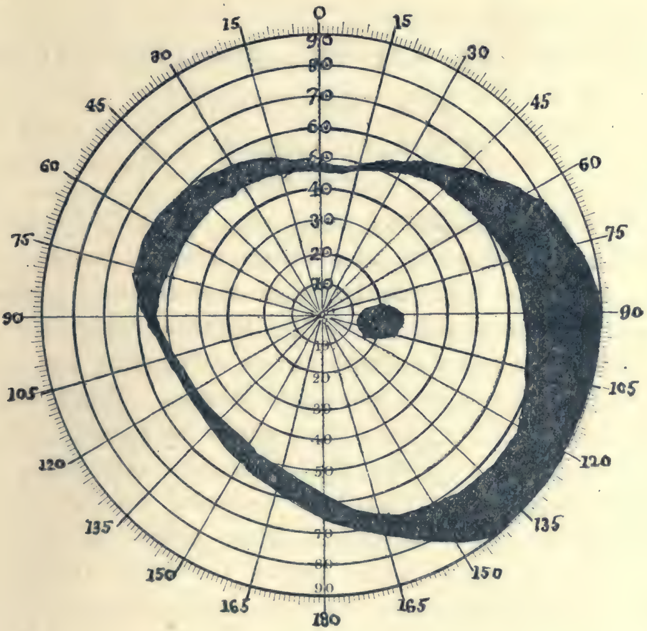


FIG. 2.

These congenital films in the vitreous, according to Treacher Collins ("Researches into the Anatomy and Pathology of the Eye," London, 1896), would seem to be due to some irregular development of the mesoblast tissue, which normally passes in at the ocular cleft to form the vitreous humor. They are usually associated with some other manifestations of defective development, but seldom so little as is evident in this case. The greater amount of astigmatism in that eye, the restriction of the visual field to its temporal side, and the increased size of the "blind spot" should perhaps be counted in that category.

HETEROPHORIA, AND THE INDICATIONS IT GIVES FOR TREATMENT.*

BY EDWARD JACKSON, M. D.
DENVER, COLO.

H*ETEROPHORIA is revealed, only by its special tests.* When it ceases to be heterophoria and becomes actual strabismus, the diplopia becomes characteristic. Short of this its symptoms are much the same as may arise from ametropia, and more general causes influencing the nervous system, and hence are not characteristic. When found in the absence of other causes they might be taken as suggesting heterophoria, but the suggestion has very little weight until the appropriate tests have revealed an actual lack of balance in the ocular muscles. When heterophoria has been demonstrated, and all other causes for these symptoms excluded, they may become the essential indications for special treatment.

Heterophoria is not of itself a sufficient indication for special treatment. It occurs a great many times without having any significance as an indication for therapeutic measures; and in a still larger number of cases, the only important indication it gives is in the direction of correcting ametropia.

In the last 1000 cases of eye-strain seen in private practice, in all of which the muscle balance was carefully tested, heterophoria of one-half centrad or upward, was found in 714. In 287 of these, the heterophoria amounted to two centrads or upward, yet in the vast majority complete relief was afforded without any treatment whatever, directed to the heterophoria. In only six cases was operative treatment advised, and in but three was it carried out.

---

*Read before the Colorado Ophthalmological Society, Oct. 18, 1902.

Heterophoria as an indication for lenses. In the above series 398 cases showed esophoria being more than 55 per cent. of all the heterophorias.

In probably 50 per cent. of all the cases of heterophoria its principal significance was, as an evidence of hyperopia requiring correction.

In the same way exophoria, especially the higher degrees, must be regarded as dependent on myopia. This is true even when the exophoria demands direct operative treatment.

But the connection of heterophoria with ametropia is quite as real and important in other instances that are not so generally recognized. In some cases of myopia, with marked esophoria, it seems certain that the excessive turning in of the eyes is a result of their habitual use at an excessively near point.

In some cases of hyperopia, exophoria seems to arise as a symptom of eye-strain due to the hyperopia. In the same way astigmatism may cause heterophoria, and anisometropia is especially likely to be attended with variable heterophoria. Heterophoria arising in this way has much the same significance as headache, vertigo, congestion, or other symptoms of eye-strain. It constitutes an added reason for correcting the ametropia.

Exophoria occurring with myopia is an additional reason for giving full correcting lenses. In a hyperope, however, it would be a reason for not giving a full correction. Marked esophoria with low hyperopia indicates that it is especially important to give correcting lenses for constant use. Esophoria in connection with myopia emphasizes the importance of lessening the amount of near work; or giving it up altogether while the eyes are becoming accustomed to correcting lenses. In a sense the meeting of such indications is a treatment of the heterophoria. In a very large proportion of cases it gives relief; and is all the treatment required.

The degree of heterophoria. This in itself by no means determines what treatment should be adopted, or whether any direct treatment is required. Very low degrees, 0.5 centrad or less, may be regarded as physiological in most cases; or as showing some temporary disturbing influence, rather than a permanent defect in the coördinated movements of the two eyes. But on the other hand very high degrees of heterophoria, which do not run into actual deviation, (intermittent strabismus) are liable to be temporary. Sometimes they may arise by exaggeration of a permanent defect. In other cases they may be entirely acute, following especially some temporary eye-strain. Not only is this true of esophoria and exophoria, hyperphoria may also be of this character.

Miss G., aged 16, with moderate hyperopic astigmatism and no indication of any hysterical tendency, after a period of excessive eye work was found to have a right hyperphoria of from 10 to 15 centrads. The vertical deviation and recovery of the eyes, upon alternately covering them, was very striking. Diplopia could be produced, and with the cobalt glass could be continued indefinitely. But she gave no history of spontaneous diplopia, and the symptoms complained of, especially the headache, seemed to be quite recent. Under a mydriatic the heterophoria fell in three days to three centrads or less. The constant wearing of correcting lenses,

R + 0.75 s. ⌒ + 0.50 cyl. axis 90^{0}.
L + 0.87 s. ⌒ + 0.25 cyl. axis 90^{0}.

without any prism, gave relief from all symptoms including the heterophoria. Cases of marked hyperphoria of this kind are rare; but such high exophoria or esophoria, temporarily arising from eye-strain, is not very uncommon.

Permanence of the heterophoria.—This is a more valuable indication than the amount or degree. Temporary heterophoria never requires direct treatment, and it has only the general significance of a symptom of eye-strain or nervous disease. Before accepting heterophoria as having any especial importance in the case, the surgeon must assure himself that it has some degree of permanence. This may be suspected from the case history and general features, but can only be demonstrated by repeated tests. If the same heterophoria be found on successive days, with and without a cycloplegic, this may be sufficient evidence of permanence to justify its consideration, as an indication in the selection of glasses. But many more tests, extending over a much longer period (from 3 to 6 months) are required to justify anything like operative interference. The permanence of heterophoria is often very striking. I have cases in which it has continued substantially the same for periods of ten to fifteen years. But no degree of permanence should alone be considered to require its treatment.

It may exist throughout life, without causing inconvenience, harm or danger of any sort.

Diagnosis by exclusion.—It will naturally be asked, if the presence, associations, degree and permanence of heterophoria do not furnish positive indications for treatment, what can? In the present state of our knowledge, reliable conclusions can only be reached by the process of excluding other possible factors in the case. The heterophoria that requires especial treatment must be the expression of an organic or permanent functional mal-adjustment in the nervous system. There is nothing to show that defects in the muscles themselves prevent them from effectively executing properly proportioned nerve impulses except as excessively rare anomalies. and a readjustment of the muscles to balance the mal-adjustment of the nerve impulses should only be undertaken when all other modes of treatment have been tried.

The exclusion may begin with the correction of ametropia. This should be followed by careful training in the use of the eyes and graduated exercise. After these, special gymnastics, prism exercises, etc., may be resorted to, but their field of usefulness is not a very wide one. The process of exclusion must be carried on in the direction of causes for general ill health, as acute disease, chronic mal-nutrition, etc. Tonics, and especially strychnia, in ascending doses, should be tried under this head.

Treatment by prisms.—The wearing of prisms which will allow the eyes to assume approximately their position of rest without giving rise to diplopia, is a remedy easily tried; and one that can be discontinued at any time with no risk of harm to the patient. In the great majority of cases of heterophoria, glasses are needed to correct ametropia so that the trial of a prism, in combination with the lens, can very readily be made.

In view of this, it is not necessary or advisable in most cases, to carry the process of exclusion to completion before taking up the treatment by prisms. If a few trials show a fairly constant heterophoria, there is no reason why a prism of moderate strength (two centrads or less) tending to correct a portion of the heterophoria, should not be incorporated with the lenses prescribed. The older the patient, the sooner the prism may be resorted to and the greater the certainty of benefit from its use. Temporary heterophoria is much more likely to occur in children; and in children there is the greatest reason to hope for the establishment of orthophoria by correcting lenses and proper methods of using the eyes. Hence, in children and young people one should be slower to prescribe the constant wearing of prisms.

The proportion of the heterophoria to be corrected by prisms also grows with age. In elderly people it is often well to give prisms equal in strength, to the full minimum of heterophoria. In children and young adults, and even in middle-aged persons whose eyes may be temporarily worse on account of strain, the prisms should not correct all the defect, but one-half to three-fourths this amount.

The strength of prism that can be used without causing unpleasant effects, distortion or chromatic aberration, limits the usefulness of this line of treatment for the higher degrees of heterophoria; and one who does not need to wear glasses for anything else may well weigh the inconvenience of permanently wearing them against the disadvantage of an operation. The prism of one centrad or less before each eye, if indicated, will almost always be worn without inconvenience. One of three centrads, or upward, always causes some distortion, and adds notably to the thickness and weight of the glass.

Patients will not always accept such prisms. Sometimes, however, a prism of double that strength is comfortably worn before each eye. Beyond six centrads very few patients can go, except for temporary use, as in near work.

Some special difficulties about the use of decentred lenses and prisms in connection with cylindrical lenses I have discussed elsewhere (*Ophthalmic Record*, January, 1902). All that can be said of prisms applies equally to prismatic effects secured by the decentring of lenses. Even where we believe that operation will ultimately give the best relief, prisms should be tried for many weeks or months. The patient should have the benefit of any chance of escaping operation, and of what can be learned of the case by watching the effect of prisms. Of my last hundred cases of heterophoria of two centrads or over, prisms were worn either temporarily or permanently by 42.

Operations.—An operation for heterophoria is a step which once taken can never be retraced. It is a crude measure. By disturbing the insertion of the ocular muscles it attempts to correct a false co-ordination of nerve impulses. These considerations should make operation the treatment of last resort, to be undertaken only in exceptional cases, after the most thorough study and careful weighing of the probability of affording relief. Resorted to with the proper caution, operation for heterophoria is justified. It is justified by the severity of the symptoms, and the extent of the disability caused; by the impossibility of relieving the patient by any other means, and by the results attained through operation.

When all other means have been tried and have failed to give relief, which of the residue of unrelieved patients should be submitted to operation? Rigid rules cannot be laid down. Each case must be considered by itself. I have never operated for less than six centrads of heterophoria, but I can conceive of a case, with two-thirds or one-half that amount, which might properly be submitted to operation. Still not all cases with ten centrads or more of heterophoria, unrelieved by other measures, should be operated upon. The above figures refer to the minimum of heterophoria found constantly present.

Exophoria seems to be most amenable to operative treatment. It is in a larger proportion of cases a comparatively passive condition. Esophoria is more frequently spastic, yielding only to operations frequently repeated, which may seriously cripple the movements of the eye. The correction of hyperphoria by operation involves disturbance of the rotation of the globe about its antero-posterior axis, and on that account must be undertaken with doubled caution. Then most cases of hyperphoria are capable of relief by prisms.

The freedom and extent of the ocular movements, as determined by the tropometer, or the field of fixation, as tested by a moving object, or upon the perimeter by the reading of small letters, must be carefully considered before deciding as to operation. The so-called abduction and adduction (prism divergence and prism convergence) should be taken into account. A marked excess of abduction (prism divergence) is a decided indication for operation in exophoria. A general deficiency or feebleness of the movements in all directions, without any decided proportionate excess of movement in the direction of the heterophoria, should make one very cautious about operating. Great variability in the degree of heterophoria, even though the minimum be above the limit that justifies operation, is another reason for caution. It means that the foundation for operative interference is shifting and uncertain. The effect of operation is very likely to be swallowed up; or it may be rendered harmful, rather than helpful, by the unstable nerve impulses.

The Operation to be done.—Generally I do tenotomy—a complete tenotomy. The only exceptions to this are the advancement of the externus for esophoria, and lateral displacement of the tendon in some cases of hyperphoria, or where vertical and lateral tendencies are combined. As to partial tenotomy—division of the center of the tendon only—I believe it has no permanent effect unless the division be carried so close to the edges of the tendon that these subsequently give way under the unnatural stress that is put upon them, and the inflammatory softening that follows the wound. It seems more rational to get the full effect of an operation at once than to leave this to be determined by an uncertain process of stretching subsequently. I would not submit any case to operation in which a complete tenotomy was likely to produce an excessive effect.

The possession of the power of binocular fusion renders the effect of an heterophoria operation totally different from that of an operation for actual strabismus. In the presence of binocular vision nature makes great efforts to restore the original status of the eye movements, efforts which are not encountered after an operation for strabismus. In general, immediate over-effect and decided limitation of movement are to be aimed at, except in tenotomy for esophoria. Knowing the usual behavior of these cases after operation, it is more reasonable to plan the operation for its ultimate effect, although one may take as a guide the immediate effect, as shown by tests at the time, without seeking to make the immediate effect identical with that ultimately desired.

Repeated operations.—Even when done as above indicated, after the most patient study of the case, operations for heterophoria will sometimes need to be repeated. The conservative operator will always prefer to err on the side of insufficient effect, and when a first operation shows decided gain, but short of complete relief, a second may be done, usually on the other eye, planned with the aid of the additional knowledge gained by the first operation. But many repetitions of operative interference tend to show that the operations done have not been wisely planned. Relief not gained by a first or second operation has rarely been reached by subsequent repetitions. One or two failures in this direction should be taken as a very strong indication for not making further attempts. Not even for the combination of lateral and vertical heterophoria are many operations necessary. Both tendencies can generally be largely overcome by a single well-planned operation on the right muscle.

Operative suggestion.—Nothing has been said about operation as a means of mental suggestion for hysterical and neurasthenic patients. I have never resorted to it for this purpose. It may be justifiable in some cases. But in considering such a thing it should be borne in mind that even if the immediate effect be good, this result may be only temporary; and the patient will be left more open to adverse suggestion from some other quarter. If the immediate effect be not good the patient will certainly be in worse condition, and liable to connect his or her subsequent symptoms with the operative failure.

Summary.—Heterophoria cannot be recognized by any subjective symptoms. When shown by appropriate tests it does not necessarily require special treatment. In a majority of cases it is chiefly valuable as an indication with regard to the wearing of lenses. Its degree does not tell whether it will require treatment or not. Its permanence is a more important, but not conclusive indication. If constant, it may be partly or wholly corrected by prisms, especially in elderly people.

Before resorting to operation, correction of ametropia, careful use of the eyes, graduated exercise, special gymnastics, the removal of all cause of ill-health, and general tonics should be patiently and persistently tried. The operation of preference would be tenotomy for exophoria, advancement of the externus for esophoria, and lateral displacement with tenotomy when vertical deviation is present. Operations should not be frequently repeated; and they are of doubtful propriety as a means of suggestion.

A CASE WHICH DEMONSTRATES THE VALUE OF RADIOSCOPY IN OPHTHALMOLOGY.

BY FRANK L. HENDERSON, M.D.
ST. LOUIS, MO.

BOURGEOIS, in a late number of *La Clinique Ophtalmologique*, took the position that radioscopy is of little, if any value in ophthalmology. In the same journal of January 10, 1902, Terrien disputes the statements of Bourgeois, and cites a most interesting case in which radioscopy was not only of service, but of more service than radiography could have been in the same case. In *La Clinique Ophtalmologique* of February 10, 1902, Bourgeois again takes the position that radiography must be resorted to in the vast majority of cases, and that radioscopy is of little practical value. Just after reading the above controversy a case occurred in my practice in which the simpler method of radioscopy so completely met all requirements that I am prompted to report it.

On April 5, 1902, L. M., aged 12, had his left eye injured by the explosion of a cap in an ordinary cartridge. Vision had never been much impaired and no pain had ever been felt. On June 5, he was brought to me to explain the presence of a tumefaction which had lately developed in the upper and outer scleral quadrant. Examination revealed a red, swollen area, between the external rectus and superior rectus muscles, extending from the limbus back to the fornix.

The pupillary margin of the iris had been carried backward and outward to its scleral circumference, at a point about 30 degrees above the horizontal meridian, and had become adherent in a cicatrix there, producing a pointed coloboma. There was no evidence of any irritation of the iris or ciliary body, and no involvement of the conjunctiva, except in the region of the tumor. The lens was transparent and vision was $= {}^{6}/_{27}$.

The fundus was normal, except far forward under the tumor a steel gray spot was seen, but owing to its anterior position nothing definite regarding it could be determined. From the wound of the iris and appearance of the fundus it was more than probable that a foreign body had penetrated the interior of the eye. There was no evidence of a wound of exit, and the physician who brought the boy to me declared there never had been one. The evidences of the presence of a foreign body seemed complete, but for the sake of confirmation it was decided to resort to radioscopy. The use of a Kinradie coil, X-ray machine was secured. It was the left eye which was injured. The tube was placed on the right side of the head. By a one-eighth turn of the face toward the tube a position was secured which presented the least bone interference. Then by a strong adduction of the left eye the tumor was drawn from behind the edge of the malar bone. An assistant was then instructed to point with his index finger (a metal probe would have been better) toward the spot where it was most probable the cap was lodged. With the fluoroscope a round black spot was plainly seen in front of the pointing finger.

Under chloroform anæsthesia an incision was made through the tumor, along the upper border of the external rectus muscle. The tissues were much thickened, but the cap was soon found under the upper border of the external rectus, near its attachment and lying in a wound of the sclera. Healing was uninterrupted. Two weeks after the removal of the foreign body the episcleral swelling had so subsided that a scleral cicatrix could be seen extending from the limbus to the point where the cap was found.

Copper is most destructive when retained within the eye. Though this piece tore through the iris and ciliary body, it must have passed far enough through the sclera for a plastic exudate to shut off its connection with the delicate and susceptible internal structures, or in two months the eye would have been destroyed. The interesting point in the case is the ease and simplicity with which radioscopy made the diagnosis absolute. A radiograph would have added to the patient's expenses, and would have necessitated a delay of several days and could not have revealed more than the simpler method.

THE PREVENTION OF THE BLENNORRHŒA OF THE NEWLY BORN BY MEANS OF CREDÉ'S METHOD.*

(From the Obstetric Clinic at Dresden.)

By PRIVY-COUNCILOR PROF. G. LEOPOLD.

(*Translated by A. Alt, M.D.*)

TWENTY years have elapsed since Credé published his epoch-making discovery, "how to prevent with certainty the blennorrhœa of the newly born by means of the instillation of one drop of a 2-per-cent. solution of nitrate of silver." Yet, in spite of the long time which has elapsed and in spite of the extraordinary good accomplished by this method, it has not yet been generally adopted.

What a difference between then and now in the obstetric clinics! At the end of the seventies there was probably no clinic which did not, in a separate room, show one or more of these unfortunate infants, who were in danger to be blind for life. It made one shudder to enter such a room. And, but a few years later, beginning with 1884, this notorious room had disappeared from the obstetric clinics as if by magic. Physicians and nurses were relieved when this plague had disappeared. Blennorrhœa of the eyes did no longer exist, and appeared only in rare and exceptional cases, and every clinic which wanted to obtain such brilliant results made use of the 2-per-cent. nitrate of silver solution and the glass rod, two things which are as simple as could be desired.

After the first publications concerning the results obtained by Credé's method one might have hoped that it would be speedily and generally accepted. When, however, this expectation was mentioned in a private talk, Credé did not share such a hope. The experiences he had made with his method of removing the after-birth, which it took twenty years to be generally adopted, had taught him that a new generation of young physicians and nurses would have to be educated and to have seen his success before the ground would be sufficiently prepared for a general implantation of the new method.

---

*Berliner Klin. Wochenschr., 1902, No. 33.

He was right, indeed. Although the ophthalmo-blennorrhœa of the newly born has *de facto* disappeared from the obstetric clinics, although Credé's method is as certain as it is free of danger, the number of the losses of sight has not by any means been diminished in the country as should be expected in view of the great results in the obstetric clinics. And it is really now high time that the general public should get the benefit of this method. It must be to the interest of the State to protect everyone without exception against so serious a disease, and the government not only has the right, but it is its duty, to remove from the blind schools and the communities the expenditures which are necessitated by a preventable disease.

The most interesting computation of the number of blennorrhœa-blind in Germany and other countries was made last year by Prof. H. Cohn of Breslau, and reported by him at the 10th Congress of Teachers of the Blind, held on July 31, 1900.*

He found that among the blind, in the year 1901, 20 per cent. in Germany and Austria, 28 per cent. in Switzerland, and 10 per cent. in Holland, were blind from ophthalmoblennorrhœa.

When examining the youngest pupils, who had not yet attained the 10th year, and who may, in short, be called children, he found in the German schools, 254; in the Austria, 67; in the Swiss schools, 15 children—of whom 79, 18 and 4 were blind from blennorrhœa; that is, 31 per cent. in Germany, and 27 per cent. both in Austria and Switzerland.

A careful comparison showed that in twenty-five years the blennorrhœa had only been reduced from 28 per cent. to 20 per cent.

---

*Have the New Prevention Methods Reduced the Number of the Blind? (From Examination of 500 Eyes in the Silesian School for the Blind.) By Prof. H. Cohn, Breslau.

In the German cities the blennorrhœa-blind vary from 30 per cent. to 0 per cent. The medium is found in Dresden and Frankfort (20 per cent.), and Leipzig (18 per cent).

Things are totally different when considering those under 10 years of age—the childen in the different blind-schools.

At Barby, Soest, Wiesbaden and Würzburg there are no children of that age in the schools. At Braunschweig, Leipzig, Paderborn and Stuttgart there is no blennorrhœa-blind among 15. But at Hamburg, Neukloster, Koenigsberg, Bromberg and Dueren, 9, 12, 15 and 16 per cent. of the children were blennorrhœa-blind. In other institutions the percentage varied from 20 to 50.

Dresden has 40, Nüremberg 37, Frankfort 66, Breslau 70, Stetten 75 and Königsthal 99 per cent. of blennorhea-blind children. This shows that in from six to ten years ago Credé's method was not very often made use of. It is not correct to calculate with the whole number of pupils, but each year the new arrivals should be examined and correct reports be given out by the schools. As, however, we have ascertained that in 1895, 83 out of 2,233 blind children, and to-day 79 out of 2,116 are blennorhœa-blind, this is dreadful. It means that even now 31 per cent. of all blind children are blind from blennorhœa.

There remains a great deal to be done.

This 31 per cent. of blennorrhœa-blind children could have with certainty been prevented from being blind if Credé's method had been employed. For this method is *certain, without danger* and *simple.*

With regard to its certainty, it seems to be useless to waste any further words. We want to state that when interrogated by Cohn as to this point, the chiefs of the obstetric clinics of nineteen German universities, without exception, supported Credé, and some with marked enthusiasm. I have myself at different occasions reported on larger series of births of 1,000, 1,300 and 1,600 children, with not a single case of blennorrhœa. And yet, as has been exactly ascertained for years, at Dresden a large number of the parturient women (from 8 to 10 per cent.) suffer from gonorrhœa. A compilation of a round 6,000 births within the last three years at this clinic has again shown what a sovereign remedy the 2-per-cent. nitrate of silver solution is, since but for a few light cases, this solution has, when Credé's method was rigidly followed, prevented ophthalmo-blennorrhœa altogether.

The same testimony has been given in favor of Credé's method by Schallehn and Runge of Goettingen.

Schallehn reported in 1897* that of 197 infants, during 1888 to 1896, who were treated after Credé, none suffered from the early, and but two from a late infection (8th day). E. Runge† found that from the latter part of 1896 till March, 1902, of 1,000 infants, none showed an early and one only a late infection. This case was an extremely light one, as it was cured in two days. In the Goettingen obstetric clinic there were then in 1917 cases, of early infection none; of late infection but two (0,156 per cent.), yet at times 20 per cent. of the parturients were gonorrhoic.

The Credés method was, however, changed in such a way with the last 928 infants that a 1-per-cent. silver nitrate solution was substituted for the 2-per-cent. one. With this there were 0 per cent. of early and 0,108 per cent. of late infections, which shows that it is effectual.

It has been claimed that this method is not without danger, and should, therefore, not be generally recommended, especially not be given into the hands of the nurses. Cohn says: "There were complaints made at certain obstetrical clinics that the drop irritated the eye too much and produced a stronger or lighter catarrh—a silver catarrh, so-called—and that thus a blennorrhœa might be simulated. I, therefore, asked 110 oculists whether they had seen any lasting damage caused by the drop. But two answered in the affirmative; in one case the family physician and in the other the midwife had poured too much solution into the eyes. Seventy-nine of the oculists supported Credé; 39 wanted this method to be made compulsory. Fifteen only spoke against it, fearing the awkwardness of the midwives. In consequence, milder remedies were tried, in order to avoid the silver catarrh."

It was especially Cramer's communications from the obstetric clinic at Bonn which described this silver-catarrh as a great drawback of Credé's method. The importance of this question prompts me to scan these communications a little further.

---

*Arch. f. Gynæc., 54, I.

†Berl. Klin. Wochenschr., 1902, No. 20.

Led by the diversity of opinions among certain physicians as to the detriment or innocuity of the 2-per-cent. silver solution, Cramer proceeded to examine the silver-catarrh more exactly. He thought it necessary at first to find out by observing series of cases, treated uniformly, whether and for how long an eye would react. Secondly, why, with a uniform technique, the eyes of different children should react so intensely differently. Third, to find out whether and for how long the silver-catarrh is an aseptic one—that is, from what period on bacteria could be found in the secretion, and what kind of bacteria might cause further secretion.

In order to answer these questions, he treated 300 newly born with silver nitrate in the period from April 1 to December 1, 1898. In a continuous series of 100 infants, the clinical course of the silver-catarrh was more especially observed and noted down.

"The technique in all cases was the following: After one drop of a 2-per-cent. solution of silver nitrate had been dropped into the inner canthus, while the infant lay on its back, the lids were separated and the fluid made to flow over the eye by turning the head. By means of shutting and opening the lids, the solution was spread in the conjunctival sac, and then the outer surface of the lids and the surroundings were wiped with dry cotton."

What were his observations with this method, which, as we will see later, differs essentially from Credé's method?

The following are Cramer's own words:

"The time between the instillation and appearance of the catarrh varied. Severe irritations were seen earlier, then those of lighter degree. Often but two hours after the instillation a florid purulent secretion from the conjunctiva was present."

The following refers to the quality of the reaction: "For infants the secretion must be called enormous. In these the secretion ran in streams over the face of the infants and into the pillows, which were soaked with it. The discharge had all the characteristics of the severest blennorrhœa; at times it contained blood. When the agglutinated lids were separated the secretion flew out in an arc. Twenty-five infants showed a very severe reaction; the conjunctival sac was filled with pus, which oozed out strongly between the lids. There was also at times some blood. In 31 infants the reaction must be called a severe one.

"These three groups with severe reaction concern 60 infants. Of the other 40, 20 showed a moderate, 10 an insignificant, and 6 a very insignificant reaction. In four infants no reaction was seen."

I must confess that, in my observations of now 30,000 infants, I have never seen such a severe reaction and with such frequency following the employment of Credés method. Repeated questioning of my assistants and head-nurse, for fear I had overlooked it, has also proven that they have never seen such severe reactions. It must be added here that the technique of instillation which Cramer used in his cases is certainly not the one exactly described and recommended by Credé.

In my opinion a great deal depends on this. It is clear that if such enormous reactions as Cramer described should often follow, a general introduction of Credé's method could not be thought of. To us, however, such things are absolutely strange; neither have other clinics reported similar observations.

Credé directs very minutely that after the infant has been bathed an assistant or the accoucheur himself is to open the eye with two fingers of the left hand, and to instill from a glass rod one single drop of a 2-per-cent. silver nitrate solution on the cornea in such a manner that the lower arc of the drop touches the cornea, and that then the eye is to be allowed to close itself and nothing further be done.

Cramer, however, instills a drop into the inner canthus, then pulls the lids apart to let the drop flow over the eye, and then opens and shuts the lids in order to spread it in the conjunctival sac.

By this means he rubs the silver solution into the cornea and conjunctiva. That such a manipulation, which is foreign to Credé's instruction, cannot be made without injury in an infant's eye, and must even be held responsible for the extraordinary results in his 300 cases, I do not in the least doubt.

If Cramer should treat 300 cases exactly according to Credé, I am convinced that he will find what we, Fehling at Basel and Halle, *Runge, Gusserow, and others have found, and that he will see no such severe consequences as he has described, and that he will no longer know such a traumatic conjunctivitis.

In thus unconditionally refuting the observations of Cramer concerning the silver-catarrh as a result of Credé's method, I can but say from my own observations, made in my own clinic in a period of nineteen years, and in unison with Fehling and others, that this method is as certain as it is without danger.

And it is an extremely simple method. It calls for nothing but a bottle containing a one to two per cent. solution of nitrate of silver and a little glass rod; furthermore, sufficient training, which the clinics and midwives' schools supply, and a certain dexterity.

Before going further, I must mention an article by L. Hirsch on the origin and prevention of blindness, in which the author speaks in detail on blennorrhœa of the newly-born and Credé's method.

Several sentences in this article must not remain unchallenged.

On page 511 (*Klinisches Lehrbuch*, VIII., 4), he says: "Since, in spite of a careful application of Credé's method, blennorrhœa cases, while considerably reduced in numbers, have not altogether disappeared from many public lying-in institutions, it is clear that Credé's method is not an absolutely certain means for the prevention of this disease." This is not quite true. Based on the excellent results of Runge, Fehling, and others mentioned above, and my own experience, I can answer that if Credé's method is employed exactly, and not with any changes, which some still call Credé's, and, further, if this method is not only exactly applied in the clinics and midwives' schools, but its application by midwives and pupils is untiringly watched by the assistants, and, further, if the slight irritation which now and then does appear after the instillation is left alone and not manipulated and "treated," the results in the clinics and lying-in institutions are certainly brilliant, and blennorrhœa of the newly-born is likely to disappear almost altogether.

---

*S. Koestlin. Werth der Credéschen Methode zur Verhuetung der Ophthalmoblennorrhœa neonatorum und ihre allgemeine Unfehlbarkeit. Arch. f. Gyn., 50, 257.

The most important factor in the prophylaxis is the room in which the parturients are confined. Over-confidence is at all times bad in obstetrics, but it leads to the greatest disappointments if Credé's method is not carefully applied. Whenever, without variation, a drop of a one or two per cent. solution of silver nitrate is instilled into the eye, according to the rule, no blennorrhœa does result. This conviction nobody can rob me of, as long as I am not shown to the contrary.

I can maintain this standpoint the more vigorously, since I have repeatedly gone through periods of the most varying results in my own clinic. Many months, once even a whole year, passed without one single case of blenorrhœa or mucopurulent catarrh on the fifth or sixth day of the puerperium. During these periods no fewer gonorrhoic women were confined, but the two obstetric wards were in the hands of assistants and midwives, who watched or did everything with especial care.

Then, again, there were periods in which unfortunately once in a while a blennorrhœa or a late gonococcus conjunctivitis was reported. A careful investigation never failed to find the cause. Either the medical control was not careful enough, for lack of interest or energy. It was evident in a number of parturients that the results were not as good as they had been in the previous half-year, in which another assistant had charge of the ward. Asepsis and antisepsis, as well as watchfulness and circumspection, are not the same for one as they are for another? Or the midwife had forgotten the instillation, or had not done it according to the rules. When these conditions were remedied, we regained at once a perfect quiet, and no blennorrhoic infants had to be treated.

Hirsch adds: "Induced by Credé's successes, one might think of introducing his method as a general obligatory one for all infants. Three things, however, militate against this: First, the midwives are not, as a whole, sufficiently trained to apply this method *lege artis;* in the country there are many midwives who come from small schools, and who have never seen it employed, much less have employed it themselves."

This objection is not valid, and has been exhaustively refuted by Koestlin (*Arch. f. Gyn.*, 50). Midwives are allowed to catheterize, to make tamponade, to rupture the membranes, and to do many other things—in Prussia, even to make a version. And yet they should not be able to learn Credé? This extraordinary simple manipulation which cannot be compared with the seriousness of a version or forceps delivery.

In my clinic the pupils are taught this method, they employ it themselves under supervision, and we have no blennorhœa since then. What is possible in our clinic can be done in others. It only needs the same care, exactness and love for the thing.

"The second objection," says Hirsch, "which is to be made to a generalization of this method is, that it is not unconditionally innocuous. From the experience of nearly all authors it causes an irritation, which is often disagreeably prolonged or passes over into a true inflammation (Cramer).

From what we have said above, the reference to Cramer is untenable, since he made use of another than Credé's method. We must, however, acknowledge that Credé's method does in fact now and then (as Koestling and Fehling have also stated) cause in the first 24 to 48 hours a slight irritation, so that especially in prematurely-born infants, the eyelids are a little congested and secrete a trace of discharge.

This occurs, however, but rarely and usually disappears in a few hours. I may even say, this hardly ever occurs, if instead of a 2 per cent. a 1½ or 1 per cent. solution is used, which as Runge has shown, acts with equal absolute certainty.

During the visits to the puerperæ I always show the students a series of infants, usually from 18 to 20 who have been born during the preceding three days, and by far the most of these do not show even a trace of a reaction. Where such an irritation is produced, it disappears by itself. We certainly never treat it. The infants are bathed as usual, and we soon see that their eyes are clear, and open and shut spontaneously.

When Hirsch adds that in one case (Uhthoff's clinic)

Credé's method caused an opacity of the cornea, and that Elschnig has seen the same thing occur twice in an obstetric clinic, I can only maintain that in my 30,000 cases I have never seen anything like it, and that in those cases the real method of Credé had certainly not been employed.

The third objection of Hirsch is the following: "Finally, the number of those threatened with blennorrhœa is much too small to wantonly generalize a method which may bring detriment rather than good to those not endangered." This objection has no foundation to go on, first before no damage can be spoken of, and secondly because it is a perfectly unwarranted statement that the number of those threatened with blennorrhœa is too small. Of the parturients in the Dresden clinic on an average 10 per cent. are gonorrhoic. At Leipzig the conditions are probably no better. The average number of births per year is here about 2,200, at Leipzig about 1,500, which would give alone for these two institutions 370 gonorrhoics. Is this not an awfully high figure? To these we must add the births at the polyclinics and of private practice, in which gonnorhœa is not absent by any means. But, no matter what among these the percentage may be, in what is a little irritation of some eyes treated by instillation and its certain safety from blennorrhœa, when compared with the disease itself and its uncalculable consequences, with the possible loss of an eye, with the annihilation of the joys of life and the deep sorrows and heavy sacrifices of the parents of such unfortunates?

I again return to my dictum that Credé's method is certain, without danger and simple.

In explanation of what I have said, I may mention the year 1898 in my clinic* in which 2,282 women were confined. When the still-born, inclusive of abortus cases, and those infants who died in the first few days of life are deducted, there remain 2,146 infants, two of whom suffered from blennorrhœa, that is 0.14 per cent.

(Continued next issue.)

---

*Dr. Schwarz, of Vienna, outdoor assistant, has gone over the books of several years with the greatest care, for which I wish here to thank him.

MEDICAL SOCIETIES.

FIFTY-THIRD MEETING OF THE AMERICAN MEDICAL ASSOCIATION.*

Held at Saratoga Springs, N. Y., June 10 to 13, 1902.

SECTION ON OPHTHALMOLOGY.

(Continued from last issue).

SEVENTH SESSION.

A. A. HUBBELL (Buffalo,) delivered an address commemorative of the one hundred and fiftieth anniversary of the publication of the first description of the cataractoperation, by Jacques Daviel, and the beginning of the modern operation of cataract. He said it was somewhat divergent from the ordinary scientific program, but he thought it well sometimes to pause and look back at these things purely from an historic standpoint; that we had honored Helmholtz by public celebration and public tribute, and had honored Donders, but had perhaps forgotten the man who originated the modern operation for cataract, Jacques Daviel. The address was not a history of cataract operation, except as it touched the life of Daviel, which it reviewed from the beginning.

TEST OBJECTS AND TEST LETTERS.

ELMER G. STARR (Buffalo) considered the importance of painstaking care and accuracy in determining the refraction of the eye, and referred to its great value for the relief of many disturbing conditions; a slight error in the measurement of the refraction might render valueless the attempt to relieve the patient. One of the most serious objections to the test card ordinarily employed was that the glare of light reflected from the white background produces retinal fatigue. He spoke of the effects of irradiation in the use of the card with black background, which was to increase the apparent size of the object and lessen the sharpness of outline. The writer showed a series of letters he had devised, which were in color on a ground of another color, the colors used being yellow and blue, which are complimentary. The glare of light and retinal fatigue is lessened, and the letter is strengthened and made more brilliant. Yellow is used for the ground, and blue for the letter, which, being complimentary, brings out the letter more sharply defined.

---

*American Medicine.

Discussion.—GOULD said that the black background, being a non-stimulating color to the retina, did not tire and fatigue it, especially when accommodation is paralyzed. $^{20}/_{10}$ could be read easily with it, because the retina acts physiologically. He thought Starr's ingenious device deserved further consideration.

GARDINER (Chicago) suggested that the irridiation spoken of by Starr might be due to uncorrected astigmatism.

RANDALL (Philadelphia) called attention to the importance of proper regard for the size of the letter, and said that ninety-nine out of one hundred make it according to the tangent of the angle, while twice the tangent of one-half the angle was the correct thing.

STARR said, in closing, that as to the suggestion of the irridiation being due to uncorrected astigmatism, it was, of course, worse in that condition, but he found it troublesome at all times.

METASTATIC SARCOMA OF THE CHOROID.

MEYER WIENER (St. Louis) spoke of the extreme rarity of the disease and the scant literature upon the subject. He described a case occurring in his practice, considering the probable location of the primary growth and the organs involved. There were multiple metastatic lesions of the choroid in both eyes. He did not get any history from the patient, did not see the case until post-mortem, and had simply reported the case because of its rarity. The growth probably started in the mediastinum, and corresponded in many ways with a similar case reported by de Schweinitz.

THE USE OF A MYDRIATIC AFTER FORTY-FIVE YEARS OF AGE.

H. M. STARKEY (Chicago) said a mydriatic was often required for proper estimation of refraction with the ophthalmoscope and for examining the media and fundus. He said there was absolute necessity for cyclopegia in certain cases before the refraction could be properly determined, and advised cyclopegia in other cases, not only for purposes of refraction, but for the relief of retinal and choroidal hyperemia and irritation. He thought that while cyclopegics were required in fewer and fewer cases as life advanced, no age could be arbitrarily fixed beyond which they should not be used; but they should be used with caution after the age of forty, because of the greater danger of glaucoma in the elderly; and, of course, in certain conditions should not be used at all.

KNAPP (New York) spoke of the use of a cyclopegic after the operation for glaucoma, where in healing there occurred a number of fine filiform adhesions; he used a drop of atropin on the first and second days. Had never seen any unpleasant result. He considered that the danger of producing glaucoma was less with eucain than with homotropin or atropin.

WEEKS (New York) said the late Dr. Noyes used atropin after iridectomy as a routine practice, and kept it up for two or three days, or until the wound was well closed.

RISLEY (Philadelphia) said it had not been his habit to use a mydriatic after iridectomy for glaucoma, and thought it might not be free from danger.

HIGGINS (Cortland, N. Y.) thought it was an unfortunate thing that patients referred any eye symptom that might arise for months or years after the instillation of a mydriatic to its use; but thought also that in persons past middle life these symptoms were not altogether imaginary.

MCREYNOLDS (Dallas, Texas) said he always used a mydriatic after operation for glaucoma and glaucomatous cataract, and considered it a reasonably safe thing to do.

YOUNG (Burlington, Iowa) said he believed that the use of a cyclopegic in persons after forty-five for refraction was especially indicated in strong, robust people, where the power of accommodation was excessive, and did not think these people at all liable to develop glaucoma.

LIPPINCOTT (Pittsburg) said in his early practice he had used mydriatics in persons past 45 more frequently than he did now, and had seen ill effects from their use in several cases.

Jackson (Denver) said mydriatics should not only be used with caution after the age of 40, but should be used with caution always. The only case of glaucoma he had seen produced by a cycloplegic was in a woman of 25, and he had no doubt that if the history had been carefully looked into before using the drug a diagnosis of glaucoma might have been made. He considered that it is often as necessary to use it after the age of 50 as before.

Bates reported a case in which atropin had been used in patient aged 18, and where the pupil failed to contract, and remained dilated for six months after its use.

Starkey said he had found it necessary to use stronger cycloplegics and for a longer time in older people than in younger ones in order to get relaxation.

THE DECENTERING OF LENSES FOR NEAR WORK.

G. C. Savage (Nashville, Tenn.) said that if there were no muscle error, presbyopic lenses should be properly centered, so placed that the visual axes would pass through the optical centers. In orthophoria the placing of the presbyopic lenses with their optical centers low would be preferable to placing them high. In simple esophoria both presbyopic lenses should be decentered out, and equally, or what would be the same thing, the frames should be made wider than called for by the pupillary distance. In esophoria complicated with hyperphoria of one eye and cataphoria of the other, the decentering of presbyopic lenses should be confined to the lens for the esohyperphoric eye and should be down and out. In simple exophoria both presbyopic lenses should be decentered directly in, and equally, or the frames should be made narrower than indicated by the pupillary measurement. In exophoria complicated by hyperphoria of one eye and cataphoria of the other, the decentering should be confined to the lens for the exocataphoric eye and should be up and in. In exophoria complicated by hyperphoria of one eye and cataphoria of the other, and plus cyclophoria the decentration should be confined to the lens for the exocataphoric eye, and should be up and in. In hyperphoria of one eye and cataphoria of the other with or without plus cyclophoria, the whole prismatic effect should be given to the lens for the hyperphoric eye; decentering should be down. In double hyperphoria both lenses should be decentered down. In double cataphoria both lenses should be decentered up.

THE GENESIS AND TREATMENT OF THE MYOPIC EYE.

S. D. RISLEY (Philadelphia) considered the origin of the myopic eye as to heredity, disease, physiologic and sociologic evolution and discussed the clinical aspects of myopia in its higher degrees and considered the various methods of treatment.

Discussion.—JACKSON (Denver) said that in the cases of high myopia he had seen nothing pointed to heredity; none of them had myopic parents. But they showed marked evidence of ill health and disturbance of nutrition. He thought the great majority developed during school life. He called attention to the importance of early correction of the refraction as a means of prevention of the development of high myopia, and deprecated the wearing of undercorrecting glasses.

RISLEY said, in closing, that he advised the wearing of undercorrecting glasses only in-doors and where the tendency to progression was marked; otherwise they are sure to have headaches and discomfort.

THE NEED FOR CORRECTING AMETROPIA AFTER MIDDLE LIFE.

C. M. CULVER (Albany, N. Y.) said that even with Donders' liberal definition of presbyopia most of it begins at the time known as middle life. That it is for presbyopia that most glasses are worn. He considered ametropia as worthy of correction at any time of life and that to try to relieve presbyopia without correcting attendant ametropia is like building on a foundation of quicksand. He considered that astigmatism changes after middle life more than before.

Discussion.—JACKSON (Denver) agreed with the writer that the correction of ametropia after middle life is just as important as at any other time.

ASSOCIATED MOVEMENTS OF THE EYES AND HEAD.

WM. C. POSEY (Philadelphia) considered the physiologic movements, including the many and various movements which the head makes through the medium of the neck-muscles. He said there were movements of the head and eyes which were abnormal and which, though symptoms of the same disease and having the same origin, are not related in the sense of being dependent upon one another. Under this class he included the movements of the head and eyes which occasionally occur simultaneously in disseminated sclerosis, paralysis agitans and other diseases of the cerebrospinal system. Then there are movements of the head that are compensatory of some failure of one or more of the extracular muscles to properly perform their function, and under this class he included the position which the head assumes after paralysis of the various ocular muscles. Other movements of the head and eyes, abnormal in character, seem to bear a direct relationship with one another without being compensatory. Under this heading he considered the subject of conjugate deviations, miners' nystagmus and head jerking in infants. The writer reported two cases of synchronous movements of head and eyes due to a central cause.

A vote of thanks was extended to the chairman and secretary of the section for their very efficient work, which had resulted in one of the best meetings the society had ever held. A vote of thanks was extended to Haab for his kindness in coming to address the section. Haab briefly thanked the section for having conferred the honor upon him of making him a member and said he was very proud of it and would try to make a worthy member. He regarded the honor as the coronation of all the kindness he had met with in this country.

THE COMMITTEE ON NOMINATION.

Chairman, John E. Weeks, New York; secretary, Frank Todd, Minneapolis, Minn.; representative in the House of Delegates, Frank Allport, Chicago.

ABSTRACTS FROM MEDICAL LITERATURE.

BY W. A. SHOEMAKER, M.D.,
ST. LOUIS, MO.

MONOCULAR NYSTAGMUS.

Dr. Ernst Heimann (*Klinische Monatsblätter für Augenheilkunde*, September, 1902, p. 99). Since in the literature of monocular nystagmus are grouped together many varieties which do not make a congruous picture, Dr. Heimann thinks it would be useful to give a statement of the prominent etiological influences which produce this condition. True monocular nystagmus can be spoken of only when there is not a trace of the condition in the sound eye. Schrapringer believes that there is scarcely such a thing as pure monocular nystagmus, but, to Dr. Heimann, he seems to have gone beyond the mark in this statement. Monocular nystagmus certainly occurs, and not so rarely.

1. In eyes with strabismus, and a high degree of amblyopia.
2. As an accompanying symptom of nervous and cerebral affections.
3. As a transitory affection with or after *spasmus nutans* in children.

Monocular nystagmus in an amblyopic and squinting eye is always developed in infancy, and affects the eye to such a degree that fixation with it is impossible. It is distinguished from the other forms of nystagmus by the fact that most of the movements of the eye are less rhythmical, that is, more of the action of the pendulum and a trembling movement of the eye takes place. The oscillation is irregular and relatively slow. In a case observed by Alfred Graefe, the nystagmus disappeared when the good eye was covered, and an attempt made to secure fixation with the poor one.

But in a case observed by the author, nystagmus remained in spite of fixation. The patient was a mechanic, eighteen years of age, and had squinted since his early childhood. There was convergent strabismus on the right side, of three millimeters. In that eye vision was perception of light. Left normal. In binocular and monocular fixation the right eye moved upward and outward. The strabismus was successfully treated by advancement of the right externus.

Monocular nystagmus, as one of the symptoms of nervous and cerebral diseases, has been described as occurring after inflammation of the spine, traumatisms affecting the skull, syphilis of the brain, multiple sclerosis, epilepsy and severe hysteria. In such cases monocular nystagmus may appear at any age. Naturally, on inquiring into the existence of this disease, one must always depend upon the statements of the patient, which are not usually accurate, since a transitory nystagmus could be easily overlooked.

The third form of monocular nystagmus, as has been said, is in *spasmus nutans*, in which the head of the little patient moves rhythmically and in a vibratory fashion. The movements may be horizontal, vertical or diagonal. The movements of the globe follow each other exceedingly rapidly. One hundred and twenty movements in a minute have been counted. The prognosis is thoroughly good, but there may be a recurrence of the symptom. Dr. Heimann remarks that the hypotheses as to the cause of this nystagmus are manifold. Theoretically, at least, we admit the situation of the disease may be first in the muscles of the eye, second in the nerves supplying these muscles and third in the visual centres.

Raehlmann has placed both the first situations in the background by his excellent article on the neuropathic nature of all varieties of nystagmus, but this view is not everywhere accepted. The general one is that of Alfred Graefe, which is, that in consequence of the weakness of the visual impressions made upon the eyes, a weaker sensory irritation acts upon the cerebral visual centres, and consequently the optic motor centre is placed in a subnormal state of excitement. Graefe also believes that there is no congenital nystagmus, but that the disease is always acquired. Dr. Heimann does not take part in this dispute as to the physiological and psychological conditions of the visual act. (Following this there is a discussion of the various hypotheses as to monocular nystagmus). The author remarks that there is very little to be said as to the treatment. In the second group of cases, the nervous and cerebral affections causing the trouble are to be treated. In *spasmus nutans* a bright room, calomel, phosphorous and warm baths should be considered as remedies.

In the treatment of monoculor nystagmus occurring in strabismus, surgical interference is of course required. Several authors have reported that lessening or even the cessation of the monocular nystagmus has been observed after operations on the muscles of the eye, for the purpose of removing the squint. Dr. Heimann, as has been stated, has also observed this in a case here reported, where, by such an operation, the globe is, to a certain degree, pushed back into the orbit, which can be recognized in the accompanying ptosis, after a vigorous advancement. By this pushing of the globe into its natural cushion, a greater tension is made between the squinting muscle and its antagonist, which may well explain the disappearance of the nystagmus.—*The Post Graduate*, Oct.

THE RESULTS OF NITRATE OF SILVER IN THE NEW BORN.

Ernest Runge (*Berliner Klinische Wochenschrift*, May 19, 1902) reports 1,000 cases which were treated with a 2-per-cent. solution of silver nitrate, preventing the immediate development of ophthalmia in every instance. In one case ophthalmia developed in the second week. The author does not agree with Ludwig Hirsch, who thinks nitrate of silver does not give uniformly good results in preventing ophthalmia neonatorum.

The instillation should be practiced not later than one hour after birth, as the results are not nearly so good if the remedy is used later. In reporting cases, it is greatly to be desired that the time of instillation be noticed.

THE MODERN TREATMENT OF PTERYGIUM.

F. B. Loring (*Medical News*, August 2) describes the new operation for pterygium, devised by A. Coe, and reports complete success in the twenty-two cases treated by this method. The instruments needed are an alcohol lamp and a platinum wire, having a hook about three and one-half millimetres wide and one thick, mounted on a wooden handle. The hook is heated to a white heat and the bottom of the convexity pressed against the point at which the apex of the pterygium protrudes above the surface of the cornea on the pupillary side, and then elevating the handle brings the rest of the hook to bear in a direction parallel to the axis of the growth, from the apex to the base. One application is generally sufficient if thoroughly done.

THE AMERICAN JOURNAL
OF
OPHTHALMOLOGY.

VOL. XIX. DECEMBER, 1902. No. 12.

ORIGINAL ARTICLES.

A CASE OF EPITHELIOMA OF THE OCULAR CONJUNCTIVA.—EXCISION.—MANY RELAPSES, BUT FINAL CURE.

BY CHARLES J. KIPP,
NEWARK, N. J.

(*Microscopical Examination by Adolf Alt.*)

MRS. A. L., born in the United States, 26 years of age, living at Stillwater, N. J., a well-developed and healthy looking woman, came to me at the Newark Eye and Ear Infirmary for the first time January 3, 1885. She stated that after an attack of measles, when she was eight years old, a small swelling, like a pimple, was first noticed on the white of the eyeball, between cornea and outer canthus. Nothing was done for this swelling till she was twenty years old (six years ago), when it had attained considerable size. It was then attacked by a country practitioner with knife and caustics, and apparently removed. The growth reappeared, however, very soon, but remained small and gave her no pain or uneasiness for two years. Since then it has been growing slowly to its present size. At her first visit to me the ocular conjunctiva between cornea and outer canthus was the seat of a new growth about the size of a ten-cent piece (10 mm. in diameter). It was between one and two mm. in height, and was most elevated at the corneal margin. The growth overlapped the outer fourth of the cornea, but was not adherent to it. It was of a yellowish-red color and gelatinous consistency. It was very vascular, large conjunctival and subconjunctival vessels coming from the lower part of the equator, passing into the growth. The growth was slightly movable over the sclerotic. The eye was otherwise normal. It was E. and $V^5/_4$. On January 7, 1885, I made a most thorough excision of the whole growth, undermined the conjunctiva above and below, and by making an incision above and below in the conjunctiva some distance from margin of growth was enabled to cover nearly all of the defect.

The wound healed without reaction, and I discharged the patient about a week after the operation. She went to her home and I did not see her again till July 27, when I found the eye free from irritation and saw no signs of a relapse. A few weeks after this visit, the patient noticed the reappearance of the growth at the sclero-corneal junction, but was unable to visit me again till November 29, same year. At this visit I found that the growth had again attained its former size, but its situation was somewhat changed; it now covered more than the outer third of the cornea and extended less on the sclerotic than formerly. It was now adherent to the cornea. I again excised the entire growth, taking with it the outer layers of the cornea as far as the growth was connected with it. After the excision of the growth, I applied the galvano-cautery to whole of the deficiency. The operation was not followed by much reaction. Up to March 24 of the following year (1886), the eye was quiet. Then a small area in the upper margin of the scar became red and slightly raised. I at once destroyed this raised spot with the galvano-cautery. In June, same year, I saw the patient again, and found red and raised areas in three different parts of the periphery of the conjunctival scar. I applied the galvano-cautery again to each, and in about two weeks the eye was again quite without injection. On July 29 I saw the patient, and could find no signs of a relapse, but a month later, August 26, I found two suspicious looking places in periphery of the conjunctival scar and again used the galvano-cautery. Two months after the last visit, October 2, I discovered another slight relapse which was also destroyed by the galvano-cautery. *During the following three years the eye was free* from a return of the growth, but in May, 1889, she returned home, and I found that a part of the upper margin of the conjunctival scar, close to the sclerocorneal margin, was again red and somewhat raised. I again used the galvano-cautery and burned away the tissue for some distance away from the inflamed portion. Since then there has been no return of the growth. At the time of this writing, November, 1902, more than thirteen years after the last cauterization, the eye is entirely free from signs of disease, and I think we may regard the case as cured.

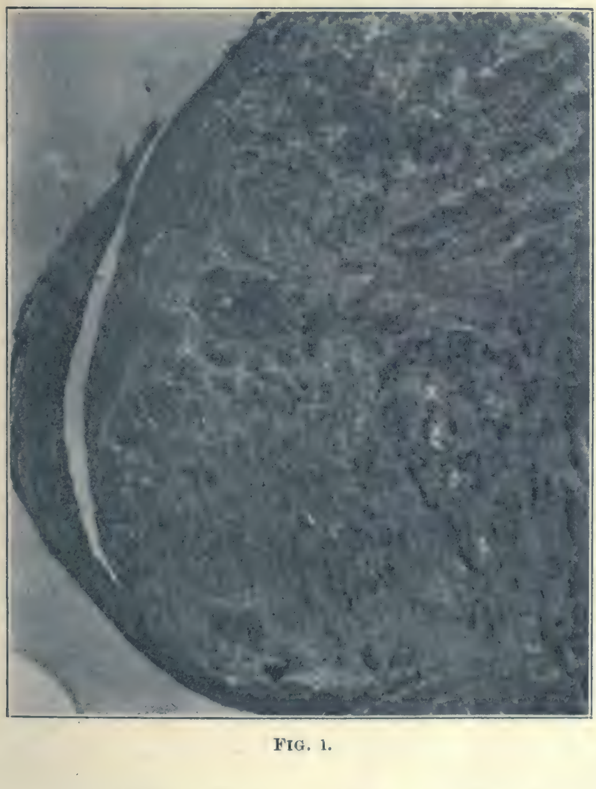


FIG. 1.

Microscopical examination of growth by Adolf Alt, M.D.

Dr. Kipp sent me two slides, marked one and two, for microscopical examination.

No. 1 represents a small tumor and a larger piece of apparently normal corneal tissue.

The tumor is roundish. It is covered with several layers of epithelial cells, which in places are largely increased in number and have grown into the underlying connective tissue. The tumor itself consists of some connective tissue and innumerable nests and some large pegs of epithelial cells divided from each other in places by broad connective tissue fibres, so that the tumor has a lobulated appearance. It is very vascular. At, what I consider as the corneoscleral margin, its tissue contains a considerable amount of pigmented epithelial cells. (Fig. 1). The base, as far as it is included in this section, shows a small round cell infiltration.

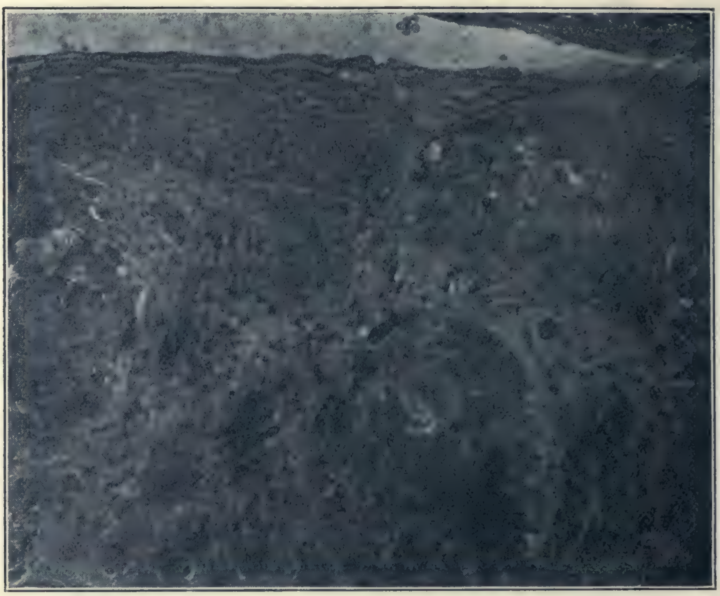


FIG. 2.

Although the specimens are old and have to a great extent lost their staining, it seems quite plain that a great many of the cells, especially in some of the pegs (see Fig. 2), are undergoing a regressive metamorphosis. These are probably the older parts of the tumor. In other pegs (see Fig. 3) this is not the case. The cells in these show sharp outlines and have retained the stain better.

Diagnosis: Epithelioma conjunctivæ.

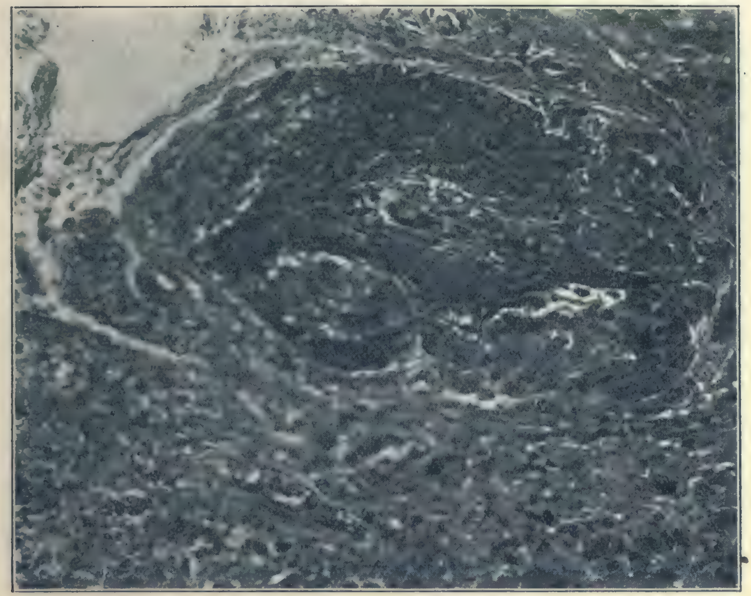


FIG. 3.

No. 2 is a flatter tumor, also, covered by epithelium, which, however, in the center is necrosed. Here numerous leucocytes cover a depression in the tumor tissue, evidently a microscopical ulceration.

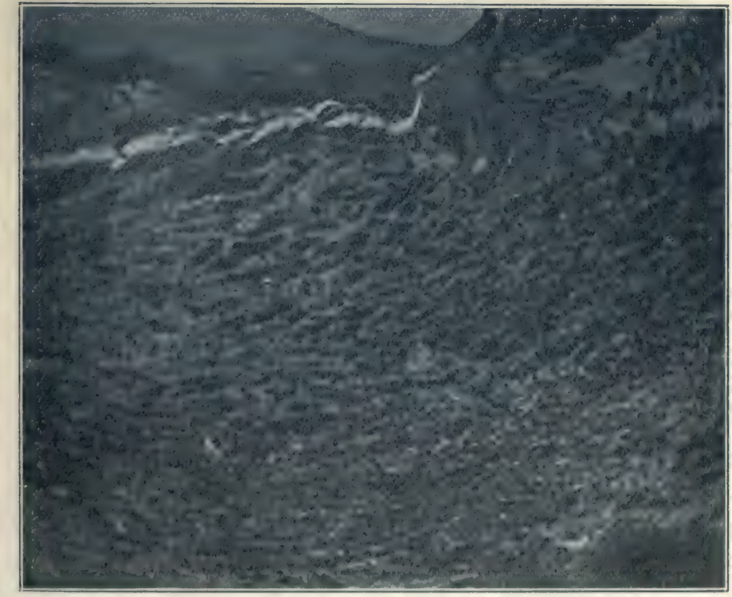


FIG. 4.

The bulk of the tissue in this section is again made up of epithelial cylinders, separated from each other by connective tissue. (Fig. 4). This tissue is by far not as vascular as that of No. 1 in one-half of the tumor, probably the corneal half, while the other, the conjunctival portion, is extremely vascular with a number of hæmorrhagic spots.

Diagnosis: Epithelioma conjunctivæ.

The two specimens agree in every particular with the ones from two epithelial tumors of the corneoscleral border which I have described as cured by myself by means of galvanocautery in previous numbers of this journal.

I may add that one of the patients is at present under my treatment for an attack of trachoma, and that there has been no relapse in the thirteen years, since by means of the cautery I succeeded in eradicating the epithelioma.

TWO CASES OF CONGENITAL ORBITAL TUMORS.

By ADOLF ALT, M.D.

EARLY in November, 1902, a 6 months old baby was brought to my clinic at the Marion-Sims-Beaumont College of Medicine with the statement, that soon after birth a small round swelling had been noticed by the parents, which was situated under the temporal side of the left upper lid. The family physician, thinking it was an abscess, had made an incision through the skin over the swelling about three months previous to their visit at the clinic, and is said to have desisted when blood flowed.

When I saw the child, a round tumor the size of a hazelnut pushed the temporal half of the left upper eyelid forward and slightly displaced the eyeball down and inward. The skin was adherent to this tumor where the former incision had been made. There was no inflammatory symptom. The tumor could be pressed somewhat into the orbit, but was itself not compressible. Coughing and stooping did not influence it.

From these symptoms I supposed I had to deal with a cystic tumor and advised its removal.

The parents consenting I enucleated the tumor carefully

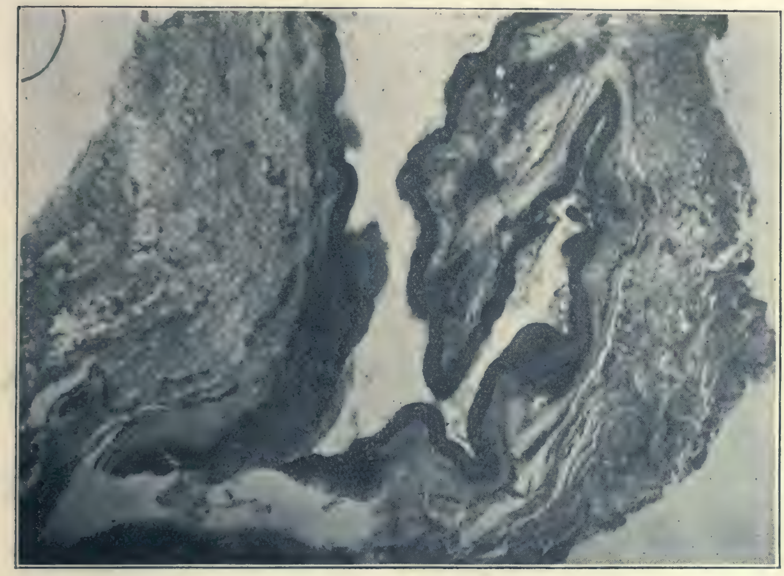


FIG. 1.

a few days later. During the removal a thin part of the wall gave way, and yellowish-brown, viscid, semi-fluid contents oozed partially out.

On microscopical examination, (Fig. 1) the tumor proved

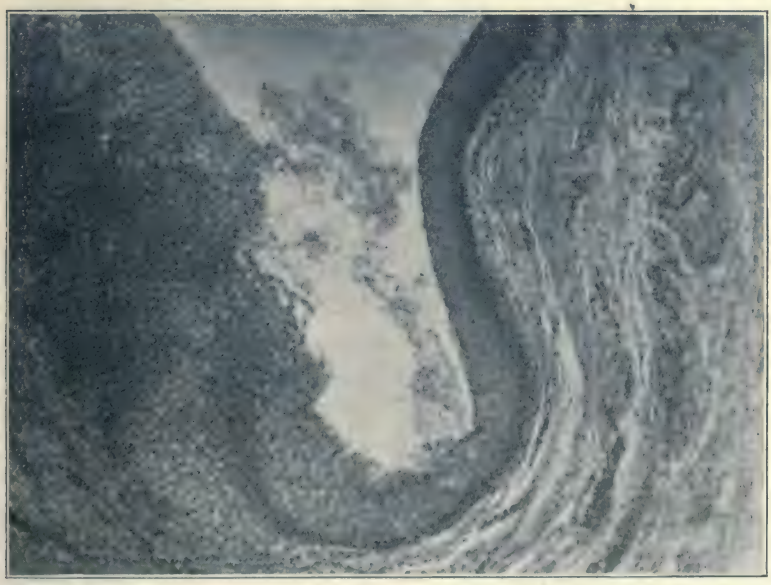


FIG. 2.

to be a cyst, lined with very thick dermoid epithelium. The contents consisted of exfoliated epithelial cells and oil globules.

In one place the otherwise uniform epithelial lining was altered considerably. Here its thickness assumed a very much greater degree than in the other parts, but its cells were evidently undergoing a retrogressive metamorphosis and stained but very poorly. The increased thickness and death of the epithelial cells was evidently due to an infiltration with an immense number of leucocytes and a beginning formation of granulation tissue. This was probably at the site of the former incision. (Fig. 2).

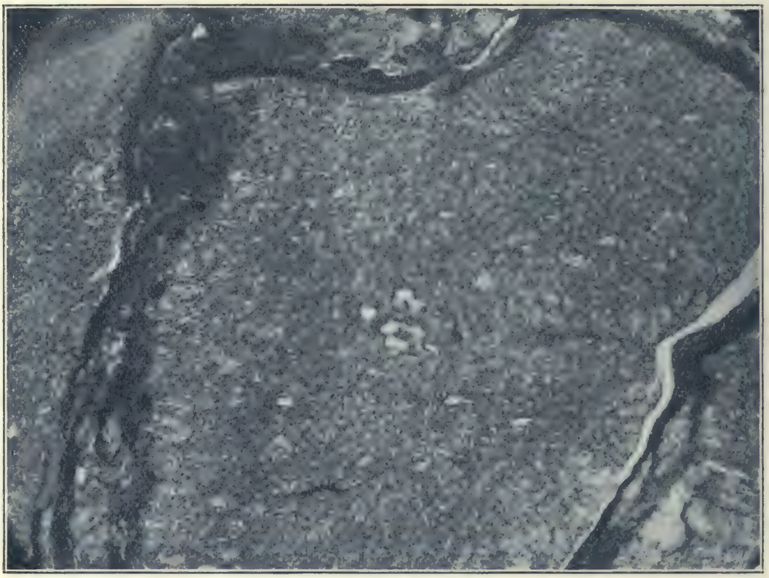


FIG. 3.

Diagnosis: *Dermoid cyst of orbit.*

A few days later, W. B., aged 4 months, was brought to my office on account of a swelling behind the nasal half of the left upper lid. This swelling had been noticed soon after birth and had since gradually increased in size.

When I saw the child, which was otherwise perfectly strong, healthy and well formed, I found a bluish elevation which pushed the nasal half of the upper lid forward and had, also, about the size of a hazelnut. The tumor could be easily compressed and grew larger when the child coughed and when the head was allowed to hang down.

From these symptoms I thought that I had to deal with a vascular tumor, probably a teleangiectatic one, and advised its removal.

I few days later, I proceeded to do so. Unfortunately the vascular tissue reached upward into the skin and began to bleed profusely as soon, as I made the first incision. After that it became quite difficult to proceed with the operation, and when I finally had, as far as I could see, removed all abnormal tissue, the child was quite pale from loss of blood.

The tumor after its removal was collapsed to only about half the size it had in the orbit, and it further shrank considerably in the hardening process.

Microscopical examination revealed as usual in these cases, a lobulated tumor, the lobules of which consisted of densely packed capillary blood vessels. There are several larger veins in or near the center of each lobule. (Fig. 3).

Diagnosis: *Teleangiectasia of the orbit.*

THE PREVENTION OF THE BLENNORRHŒA OF THE NEWLY BORN BY MEANS OF CREDÉ'S METHOD.*

(From the Obstetric Clinic at Dresden.)

BY PRIVY-COUNCILOR PROF. G. LEOPOLD.

(*Translated by A. Alt, M.D.*)

(*Continued from last issue.*)

LET us consider these cases a little further. The first case (No. 391, March); primipara with normal pelvis. Time of parturition 9 hours, 25 minutes. Rupture of membranes 2 minutes before birth. Puerperium normal, yet gonococci were found in the secretions from vagina and urethra. On the fifth day the infant, which weighed 2820 grammes, showed a blennorrhœa of the right eye. Although it was at once treated, the left eye was, also, blennorrhoic on the 8th day. A small opacity appeared in the cornea, but disappeared in a few days when the lids were cured.

In this case, as was fully proven, Credé's method had not been employed carefully, in the hurry of the overfilled obstetric ward. Such an explanation could never be allowed in private practice where there is plenty of time.

---

*Berliner Klin. Wochenschr., 1902, No. 33.

Both the second and third cases happened in the month of July. At the beginning of January and July the employes at my clinic are changed. There are new assistants, new externes, new midwives and new pupils. Thus, these two months are by us looked upon as the most dangerous ones, because everyone has to get acquainted with new conditions. Even Credé's method must be drilled in and learned.

Certain it is that these two cases in July, 1898, were due to the insufficient training of the midwife; that they might have been avoided, may be assumed from the invariable good results in the year 1898. These three cases, then, are easily explained and pardonable exceptions from the rule. If we deduct them from the 2146 newly-born during 1898, not a single one of 2143 infants was infected, although, as proven by the microscopical examination, 98, and according to the clinical aspect at least 200 of the mothers had gonorrhœa.

Similar cases may here and there happen in other clinics, too, and have happened. When, however, Credé's method is exactly employed, if the pupils are carefully watched, there is no longer any blennorrhœa; we even say it should not happen at all, not even as an exception in any clinic and obstetric institution, especially in the smaller ones, where things are more easily watched and where there is more leisure.

It has been repeatedly stated than in births with early rupture of the membranes, of long duration, with frontal and other abnormal positions, with a narrow pelvis, after forceps deliveries, the eyes of the newly born are especially prone to become blennorrhoic or to be irritated by Credé's instillation.

I cannot assent to this from my experience. For, aside from the three cases mentioned, no other infant had blennorrhœa, and the abnormal irritations which Cramer reported, we have never seen. I need not mention that among 2282 confinements a great many were abnormal, etc.

After all this, the standpoint which I must maintain as based on my experience of many years, is self-evident, especially concerning the question whether Credé's method should be made generally obligatory.

It seems to me, it is high time this should be done. Its benefits should be given to every one.

There will be hardly any serious objections to its introduction into private practice. If in any case the infant's father should object, it can, of course, not be enforced; yet the statements as to the possibilities of a serious eye disease will in some cases be sure to overcome the objections, while, in others the method must be omitted. Then the law under which the midwives must report all infected cases, must see to it that the quickest and best possible aid is furnished the diseased eyes.

As to the bitterly-contested point, whether nitrate of silver should be retained for these instillations or another and less irritating remedy be substituted, I, with Runge, Fehling, and Gusserow, maintain that nitrate of silver—and in order to remove its irritating qualities, in a 1 per cent solution—leaves nothing to be desired with a view to safety, innocuousness and simplicity.

Zweifel experimented on a large number of cases with a saturated solution of acetate of silver, while otherwise adhering strictly to Credé's method and instilling one drop only into the eyes of the newly-born. His results were brilliant. He selected acetate of silver because it will dissolve in water only in the proportion of 1.25 to 100. Thus a stronger concentration of the solution and consequent graver irritation of the eyes is out of question, especially when after this instillation a few drops of salt water are dropped into the eyes to neutralize the superfluous acetate of silver.

In view of the fact that at a later obligatory introduction of this method into the practice of midwives, the latter should be taught the simplest and surest possible method, it seems to me, that the subsequent instillation of two different solutions, first silver acetate and then salt solutions, as Zweifel proposes, may well be dispensed with. For, of 172 newly-born into whose eyes I had one drop of a solution of silver acetate instilled at once after birth, without following this with an instillation of a salt solution, 10 only showed some slight irritation in the first 24 hours. This disappeared, however, without treatment. None of the others showed any irritation. Their eyes remained white. No early infection was observed. Consequently the instillation of the salt solution is unnecessary.

In 191 infants the instillation of a 1½ per cent. silver nitrate solution gave brilliant results, no irritation, no blennorrhœa.

Induced by the excellent results obtained by Runge and Gusserow with a 1 per cent. silver nitrate solution, I intend from now on to employ this in my clinic and I expect no irritation and certain prevention.

Postscriptum. From April 2nd to July 31st, 1902, a 1 per cent silver nitrate solution was instilled into the eyes of 698 infants. No early infection was observed, and but one late infection. Irritation did not appear.

PAMPHLETS RECEIVED.

"Tuberculosis of the Eye," by C. S. Bull, M.D.

"Genesis of Glioma in Neuralgia," by B. Pusey, M.D.

"Anatomy of Ocular Muscles," by J. E. Colburn, M.D.

"Two-fold Use of Haab's Magnet in Eye Surgery," by W. J. Weill, M.D.

"Suprarenal Gland in Ophthalmic Practice," by G. E. de Schweinitz, M.D.

"Malarial Infection a Potent Factor in Asthenopic Conditions," by J. L. Hiers, M.D.

"Postoperative History of Fifty Cases of Simple Chronic Glaucoma," by C. S. Bull, M.D.

"Further Clinical Experiences with Haab's Giant Magnet," etc., by A. Barkan, M.D.

"Gummatous Invasion of the Bone, Skin, Conjunctiva, Retina and Uveal Tract," by A. Barkan, M.D.

"Case of Embolism (Thrombosis?) of a Branch of the Central Retinal Artery; Forcible Massage; Recovery," by A. Barkan, M.D.

"The Lesions in a Series of Eyes Which Produced Varirious Types of So-Called Sympathetic Disturbance," by G. E. de Schweinitz, M.D., and E. A. Shumway, M.D.

MEDICAL SOCIETIES.

PROCEEDINGS OF THE OPHTHALMOLOGICAL SOCIETY OF THE UNITED KINGDOM.*

W. Adams Frost, F.R.C.S., Vice-President, in the Chair.

Thursday, October 16, 1902.

Dislocation of the Eyeball Through the Palpebral Aperture.

Mr. H. C. Baldwin, in a paper communicated by Mr. Nettleship, recorded a case of dislocation of the eyeball through the palpebral aperture. The patient was a woman, who struck the left eye against a projecting gas bracket. Within fifteen minutes Mr. Baldwin saw her, when the eye was found gouged out and was projecting between the lids. By gentle taxis he was able to reduce it readily. The vision completely recovered, and, with the exception of a slightly crinkled appearance at the outer edge, no visible scar remained.

Mr. Beaumont said he had seen a case of dislocated eyeball in a child after a difficult delivery; here also the eye was restored to its normal position after twenty-four hours.

Birth Palsy of the Sixth and Seventh Nerves.

Mr. Nettleship recorded a case of birth palsy of the sixth and seventh nerves on the same side. The mother of the patient was thirty years of age, and she had a slightly contracted pelvis. It was a brow presentation, and forceps were used, which left a scar over the temporal bone near the ear. There was another scar on the other side, but higher up. The child was born at full term and showed no sign of asphyxia; there was no swelling of the eyelids. Within a few hours of birth it was noticed that the child squinted inwards with the right eye, the lid remained open, and the facial muscles on the same side were paralyzed. The right eye could not be turned outwards at all, and the pupil did not react briskly. On the fifth day the condition remained unaltered, and the child took no notice of a noise made near its head. A slight hæmorrhage was then noticed in the right fundus. Just behind the right ear was a slightly elevated ridge and groove where the forceps had pressed. The condition rapidly improved, and when nine months old nothing abnormal was noticed except a slight weakness of the orbicularis. He can now hear a watch equally well on both sides. Mr. Nettleship thought that the lesion was intracranial, and that the two nerves were affected in their course most likely by hæmorrhage. From the fact that the two nerves recovered at the same time he concluded that the nerve trunks and not the nuclei were the parts which were pressed upon by the blood clot. He did not know of any other recorded case in which these two nerves were involved in a similar lesion.

---

*British Medical Journal.

MR. FISHER thought that an intradural hæmorrhage would have to be very large to affect the nerves in the way described, and that a more likely explanation was that the facial nerve was nipped by the forceps as it emerged from the stylomastoid foramen, and that the sixth nerve was affected by a hæmorrhage from the inferior petrosal sinus.

PERFECT RECOVERY OF VISION IN A CASE OF LEBER'S DISEASE.

MR. NETTLESHIP described a case of perfect recovery of vision in a case of Leber's disease. The patient was a tutor, 28 years of age, whose sight failed six months before. The vision was $^6/_{60}$ and J.16 in each eye. There was a central scotoma for green, but red could be seen much better. The choroid was dark in appearance and the knee jerks were brisk. The patient's brother came under Mr. Doyne's care recently for a similar condition, when it was found that the original patient had quite recovered his sight, and had since become ordained and had subsequently become a schoolmaster. He mentioned another case, in which two brothers were affected, and here also one was said to have recovered his sight.

THE CHAIRMAN mentioned a case in which a man, aged 35, informed him that his brother had had the disease, but had partially recovered.

MESSRS. ORMOND, JOHNSON, TAYLOR and LAWFORD all mentioned cases in which improvement had taken place, but in none had recovery taken place to so great an extent as in Mr. Nettleship's case.

DERMOID CYST OF THE ORBIT.

DR. LEDIARD communicated a case of dermoid cyst of the orbit which had dislocated the eyeball and occupied the antrum.

CARD SPECIMENS.

The following were shown: Mr. A. Quarry Silcock: Detachment of the Retina. Mr. C. H. Walker: Embolism of the Inferior Temporal Branch of the Retinal Artery.

Friday, November 14, 1902.

A. STANFORD MORTON, F.R.C.S., Vice-President, in the Chair.

AVULSION OF THE EYEBALL BY MIDWIFERY FORCEPS.

MR. SIMEON SNELL (Sheffield) related this case.

The child was admitted on the day following its birth into the Sheffield Royal Infirmary (in June, 1902) with the left eyeball lying on the cheek, being connected to the orbital tissues by little more than bands of conjunctiva. There was a mark of the forceps above the left eyebrow. The particulars supplied by the medical man in attendance showed that the mother was a small woman, with a very contracted pelvis. The pelvis was so small that it was thought it would be necessary to use the perforator, but ultimately the child was extracted by the aid of forceps and the eyeball was found in the condition stated. The globe was removed by severing the slight bands that held it to the orbital tissues. The optical nerve was found to have been torn through, leaving fully an inch attached to the eyeball.

PARALYSIS OF THE UPWARD MOVEMENTS OF THE EYEBALLS.

MR. SIMEON SNELL related a case.

The patient was a man, aged 50. After being at work all day he returned home at 5 P.M., when he had his tea and fell asleep, and remembered nothing until 4 o'clock the next morning. His wife called him three times during the night, but he recollected nothing of it. When he awoke he felt very giddy, and had difficulty in standing. He again went to sleep, and remained so until 8 A.M. He then awoke with severe pain in the forehead and diplopia. When seen by Mr. Snell three days later (July 25) the eye movements were normal in all directions except upwards, but either together or separately he was unable to raise them upwards. On attempting to look up, the upper lids made the normal elevation, but the eyeballs did not move, and a rim of sclerotic was left visible above the cornea. The attempt also brought about contraction of the occipito-frontalis muscle and wrinkling of the forehead. Vision in each eye was $^6/_6$. At eight feet distance from an electric lamp, and on the same level he saw two lamps, one being about an inch above the other. There was absence of other nerve conditions. The diplopia disappeared two days later, and at the end of August he was able to move the eyes upwards, either singly or together, perfectly.

DR. ALDREN TURNER regarded the case as due to a vascular lesion, but there was no actual localizing symptoms as to where this was situated.

MR. MARCUS GUNN drew attention to the fact that, although some patients were quite incapable of looking upwards when told to do so, yet if they were asked to follow an object gradually moved upwards they could do so quite well. He asked if this had been tried in Mr. Snell's case.

MR. SNELL, in reply, said the patient was utterly unable to follow with the eyeball any moving object upwards.

NYCTALOPIA (RETINITIS PIGMENTOSA) OCCURRING IN FIVE GENERATIONS.

MR. SIMEON SNELL mentioned the case of a man, aged 46, who since childhood had found great difficulty in going about in the dark. Though gradually failing, the sight had become so bad during the last two years and a half that he was incapable of following his occupation. He was now incapable of finding his way about in the dark, the R V = $^2/_{60}$ and the left $^1/_{60}$. The ophthalmoscope disclosed a typical picture of retinitis pigmentosa. The peculiar interest centered in the fact that he was a member of a family in which large numbers were similarly affected with night blindness. The first who was known to be affected was his great-grandfather. He left an only daughter who was afflicted and from her had descended numerous instances of nyctalopia. Beginning with the great grand-father there had been a total of 69 individuals and of this number there was good evidence that 28 were affected with night blindness. The patient's father had 11 children, 5 were afflicted and 6 were normal sighted; the patient himself was the father of 11 children, 7 being affected, namely, 5 boys and 2 girls, the rest escaped. There was no evidence of consanguinity in the family. Nyctalopia descended in all instances without a break; no generation was skipped over, and it ran equally through the male and female lines. There was no instance of a normal-sighted son or daughter by the grandmother having transmitted the malady to their children or grandchildren. Fifteen of the afflicted ones were females, 10 males and of 3 the sex was not ascertained. Night blindness showed itself in early childhood. At about the age of 40, some more and some less, the affected ones had become practically blind.

THE NECESSITY FOR THE USE OF COLOR NAMES IN A TEST FOR COLOR BLINDNESS.

DR. EDRIDGE-GREEN read a paper in which he said the first requirements of a test for color blindness was that color names should be used, and the person to be examined should employ and understand the use of the color names—red, yellow, green and blue. No test which ignored color names could be efficient. He had predicted that if color names were ignored in the Board of Trade tests, normal-sighted persons would be rejected; and this prediction had been fulfilled. Over 38 per cent. one year, and more than 42 per cent. another year, were found to be normal sighted, and to have been wrongly rejected. An engine driver or sailor had to name a colored light when he saw it, not to match it. He had to say to himself: "This is a red light, therefore there is danger," and this was practically the same as if he had made the observation out loud. Even the method of matching colors should, in order to be efficient, be one of mentally naming them. In Dr. Edridge-Green's classification test he used colored materials of different kinds, as similarity, other than defined by the word "color," was the great source of error in a test of this kind. The color blind might be divided into two distinct classes, which were independent of each other but which might be associated. The first class included those who were not able to see certain rays of the spectrum; their spectrum was shortened at one or both ends. If a man had shortening of the red end of the spectrum, he would not be able to see a red light at a distance, though he might be able to pick out all the green wools in the classfication test. A man of this kind, when shown the red light of Dr. Edridge-Green's lantern test, declared that there was no light visible, at once demonstrating his incapacity. The second class of the color blind made mistakes not because they could not perceive a certain color, but because they were not able to recognize the difference between the colors which was evident to normal-sighted persons. Both these classes were represented by analogous conditions in the perception of sounds. The first class of the color blind was represented by those who were unable to hear very high or very low notes, that was to say, those notes were not existent to them. The second class was represented by those who possessed what was commonly called a defective musical ear. Normal sighted persons saw six definite colors (points of difference) in the spectrum. The second class of the color blind saw five, four, three, two, or one color, according to the degree of the defect; and they confused the colors of the normal sighted which were included in one of their own. If the normal sighted were designated hexachromic those who saw five colors might be called pentachromic, those who saw four tetachromic, those who saw three trichromic, those who saw two dichromic, and the totally color blind monochromic. The degree of the defect would be recognized by the names given to different colors.

The pentachromic would miscall orange. The tetachromic might in addition make mistakes with regard to blue. It was not necessary to reject either of these two varieties, because he had never succeeded in making them confuse the colors red, yellow, green and violet. The trichromic were always in difficulty over yellow and miscalled it red, green, or red-green, and for practical purposes must be excluded as color blind. The dichromic confused red, orange, yellow, and yellow-green on the one hand, and blue-green, blue, and violet on the other.

MR. DEVEREUX MARSHALL agreed with Dr. Edridge-Green. A "look out" or an engine-driver had not to match colors at all, but simply to recognize as quickly as possible a white or colored light. It was most striking to find a person who could pass Holmgren's test with ease saying that a dull red light which was quite visible to a normal-sighted person did not exist at all, and that the room was quite dark. Those persons with a shortened red vision were the utmost danger when placed in responsible positions either at sea or on the railway. He wondered that the Board of Trade did not recognize this.

MR. HOLMES SPICER asked whether Dr. Edridge-Green would not demonstrate his cases and his method of testing, for at the present time most people used Holmgren's test because they knew of nothing better.

DR. EDRIDGE-GREEN said he would take an early opportunity of doing this.

CARD SPECIMENS.

The following were shown: Mr. Jessop: A Case of Sympathetic Ophthalmitis, with Cysts of Iris. Mr. G. W. Roll: A Case of Congenital Ophthalmoplegia. Mr. N. Bishop Harman: Two Cases of Fissura Facialis. Mr. MacCallan: Case of Lymphangiectasis of the Conjunctiva, with Microscopic Sections. Mr. Grimsdale: Paralysis of Both External Recti. Mr. Arnold Lawson: Paralysis of the Sympathetic.

PAMPHLETS RECEIVED.

"Subconjunctival Dermoid Cyst," by J. M. Ball, M.D.

"Uveitis, A Symposium," American Medical Association.

"Chlorosis and Its Relation to the Eye," by G. F. Suker.

"The Toxic Amblyopias; A Review," by G. E. de Schweinitz, M.D.

"The Roentgen Ray in Ophthalmic Practice," by D. M. Campbell, M.D.

"The Ear from a Medico-Legal Standpoint," by W. Scheppegrell, M.D.

"Primary Sarcoma of the Iris," by C. A. Wood, M.D., and B. Pusey, M.D.

"The Toxic Amblyopias," by J. P. Nuel, translated by F. W. Morton, M.D.

"The Best Means of Removing Nasal Obstructions," by J. D. Murphy, M.D.

"Further Observations Concerning the Check Ligament," by J. E. Colburn, M.D.

Twelfth Annual Report of the New Orleans Eye, Ear, Nose and Throat Hospital.

Seventy-sixth Annual Report of the Massachusetts Charitable Eye and Ear Infirmary.

"Paralysis of Ocular Muscles After Serious Loss of Blood," by S. Neuburger, M.D.

"Penetrating Injuries of the Eye With or Without the Presence of a Foreign Body in the Organ," by J. M. Ray, M.D.

"Contagious Ophthalmia in Industrial, Residential and Public Schools, and in Asylums and Hospitals," by R. H. Derby, M.D.

"The Value of Bacteriological Examination of the Discharge in Acute Otitis Media," by E. B. Dench and F. M. Cunningham, M.D.

"Present State of Our Knowledge Concerning So-Called Partial or Graduated Tenotomies and the Heterophorias," by J. E. Colburn, M.D.

A DISCUSSION ON THE TREATMENT OF SCLERO-KERATITIS.*

By ARTHUR SANDFORD, M.D.

Read at the Meeting of the British Medical Association, Section of Ophthalmology.

I feel greatly honored in being asked to join in introducing for discussion at this meeting the subject of the treatment of sclero-keratitis, and I look forward with great pleasure to hearing the views of those distinguished colleagues who have consented to take part in the discussion, and to contribute some of the results of their wide experience to increase our knowledge of a subject which, to judge by the scanty literature available with reference to it, has not hitherto, perhaps, received that concentrated attention which its importance merits.

I may be permitted to say that I accepted with extreme diffidence your invitation to join in opening this discussion, as I feel strongly that I am unable to submit for your consideration any definite line of treatment which, from my own experience, I can regard as absolutely satisfactory. The most that I can attempt to do is to classify briefly such cases as have come under my observation, and to indicate the line of treatment which I have found most beneficial in each variety.

I believe that sclero-keratitis, pure and simple, apart from the many complications found associated with it, is an extremely rare affection, and that, with few exceptions, it is a local manifestation of acute rheumatism, or of some more or less modified form of tuberculous infiltration. This opinion may be influenced by the fact that my observations have principally been made in a country where rheumatic and scrofulous affections are both extremely prevalent.

I believe, moreover, that in no marked characteristic does sclero-keratitis differ essentially from similar manifestations which take place in other fibrous capsules, such as, for example, those of the joints or of the testes. The true significance of such affections occurring in the sclero-corneal fibrous tissue consists in their extension to or association with corresponding inflammatory conditions in the episcleral tissue, in the iris, or in any portion of the uveal tract, and in producing as secondary results opacity of the cornea or lens. Unfortunately, the great majority of cases only come under observation when some of the more serious complications have established themselves, and treatment must then be guided not alone by considerations confined to the original affection, but also by the nature and extent of these complications. In fact, the serious importance of the majority of those cases which I have seen arose from the severity of the uveal complications rather than from the originating sclero-keratitis, and the field of treatment was therefore enlarged beyond the limits laid down for discussion here to-day. The age and general condition of the patient must also exercise an important influence upon the choice of treatment to be pursued.

---

*British Medical Journal.

A large proportion of cases occur in youth or about puberty, associated with other evidences of scrofulous or tuberculous tendencies, and, in the case of females, with menstrual irregularities. In adult life I have rarely seen a case dissociated from constitutional rheumatism or rheumatic gout.

Having thus briefly referred to some of the more important conditions which must influence our choice of treatment, I shall now take up the limited reference which has been presented to us for discussion at this meeting.

By the term "sclero-keratitis" I understand an inflammatory cellular infiltration of the fibrous tissue of the sclerotic, extending more or less into the substantia propria of the cornea. This inflammatory condition may be accompanied by a superficial episcleritis, and may extend to any of the deeper and more highly organized intraocular structures. It may present itself in an acute or a chronic form, or in a post-inflammatory condition of sclerosis with opacity of the cornea, and an attenuated, discolored sclera. In those acute cases which are not tuberculous or scrofulous in origin, I have found the most favorable results from hypodermic injections of pilocarpin and the internal administration of sodium salicylate or of aspirin, whilst the eye is kept absolutely at rest by the application of light cotton-wool pads, which exclude light and keep up a constant dry heat. In some few cases this last condition was found to cause so much discomfort that the use of the pad had to be discontinued.

Iritic complications are treated in the usual manner by atropine, but I believe that it is important, in the early uncomplicated stages, to avoid as far as possible the use of mydriatics, with their attendant increase of tension and interference with free drainage. In acute or subacute cases of tuberculous or scrofulous origin, similar precautions are adopted with regard to rest and protection of the eye; small doses of potassium iodide, combined with iodide of iron and triodide of caffeine are given internally, with generous dietary suitable to the constitutional conditions, the patient being kept as far as possible in the open air. In some cases small doses of bichloride of mercury have been given, with apparently beneficial effect, apart from any evidence of specific taint.

With regard to subconjunctival injections in acute and subacute cases, I regret to say that, although in deference to the high authority of some of those who advocate this method of treatment, I still try to preserve an open mind with regard to the ultimate success of this mode of procedure, I must confess that up to the present my experience has not been of a favorable nature. In some cases, no doubt, this treatment seemed to have a beneficial action, and to hasten recovery, especially in the cases of injections of saline solutions, which might have had the effect of removing waste or morbid materials by, as it were, flushing the drainage channels. I have, moreover, been shown cases under the care of colleagues for whose opinion I have the highest respect, and who appeared to be satisfied with the results they obtained. On the other hand, I have seen a few cases in which the reaction was so severe that I am convinced the results were the reverse of beneficial. In my own experience I cannot say that I have met with results superior to those obtained by other methods of treatment.

When the inflammatory conditions have subsided, leaving a weakened sclerotic, liable to yield under the sustained pressure resulting from intraocular tension, with an opaque sclerosed cornea, I have found most benefit from a prolonged course of weak myotics, combined with a mild mercurial ointment, inserted into the eye and rubbed in by gentle massage applied through the closed eyelid. This procedure seems to promote tissue change and the absorption or removal of the morbid interfibrillar cellular deposits. More important, perhaps, than any local treatment is the careful attention to the patient's general condition, to hygienic surroundings and suitable dietary; the use of the Turkish bath also is beneficial in certain cases.

To sum up: I believe that most cases of sclero-keratitis, apart from its complications, will, if taken in time, yield to the judicious use of iodides or salicylates or of aspirin (which as a substitute for sodium salicylate I believe to be of considerable value), combined with local rest and protection, and with suitable food and hygienic conditions. But I feel that the results are not thoroughly satisfactory, inasmuch as the treatment is necessarily protracted and irksome, while the disease has a marked tendency to recur upon the smallest provocation.

Mr. Maddox said he had recently seen a case of spontaneous cure without treatment after a duration of several years. Peritomy and yellow ointment he had seen do the most good. Dry heat was very advantageous, and to allow of its more continuous and pleasant application, Mr. Maddox showed his electrical eye heater, which could be incorporated in the dressings, and was so light that 270 could be sent by post for a penny. They could be used in hospital or at home.

Dr. Hill Griffith remarked that the disease was not, as its name might imply, confined to the sclera and cornea, for it was much more extensive as was proved by increased tension, vitreous opacities, and iritis; in fact, the anterior part of the eye was all affected. In bad cases no treatment was of any avail.

Mr. Marshall thought that atropine should in nearly all cases be used. Myotics did not relieve the tension, and frequently led to a blocked pupil.

Mr. Wray said that the main stay in these cases was atropine, which should be used after the application of cocaine.

Mr. Watson Griffin said in a case which he had had under observation with both eyes affected with much episcleral thickening, the condition improved in a course of three months' treatment at first with atropine and cocaine, and then with yellow ointment and atropine, and finally with yellow ointment alone. Blisters were applied to the temples, while mercury, iodide, and general tonics were administered internally. The episcleral thickening subsided and the cornea cleared. For eighteen months the patient remained well, and then deep injection set in in the right eye, which was kept in check with adrenalin, which drug, however, could not have been used if there were any cyclitis present.

MR. BISHOP HARMAN remarked on the use of adrenalin for such cases. There was certainly temporary blanching of the eye, to the great delight of the patient, but the permanent result was *nil.* In a man who had tried everything Mr. Harman had used adrenalin, and it caused a deep-seated pain with cloudy vision and a diminished field. He thought the use of the drug might be dangerous from its producing spasms of the retinal arteries, as was seen to occur in cases of quinine poisoning.

DR. HERN said he had no intention of joining in the discussion, but the views expressed were so pessimistic that he felt bound to add a few words of encouragement. Although troublesome cases were met with, yet the majority tended to improve under treatment, and a great many got permanently well. A constitutional condition underlay them all, and that must be treated while the local treatment must not be neglected. The most useful treatment was an early and thorough peritomy and the inunction of mercury with the patient kept in bed.

DR. CLEGG said that the majority of cases he had seen were in women, and that the trouble was increased at the menstrual periods. He had found mercury very valuable. In the more superficial cases he had found yellow oxide of mercury ointment from 1 to 6 per cent., according to the condition of the eye, do the most good.

DR. GLASCOTT thought mercury and atropine should certainly be used, but the refraction should by no means be neglected.

DR. SANDFORD, in reply, agreed that the deeper parts of the eye were all affected. When talking of pilocarpin being used, he chiefly meant its use hypodermically and not locally. He thought it was often a delicate question whether myotics or mydriatics should be used. He had not found peritomy of much service.

BOOK REVIEWS.

UEBER DIE SKIASKOPIETHEORIE UND MEIN ELEKTRISCHES SKIASKOPOPHTHALMOMETER, ETC. (ON THE THEORY OF SCIASKOPY AND MY ELECTRIC SKIASCOPOPTHALMOMETER). By DR. HUGO WOLFF. Twelve Illustrations and One Table. [Berlin: 1903. S. Karger].

This very careful and exhaustive study of skiaskopy and its practical value in measuring the refraction is particularly based on the electric mirror which the author has devised, and which furnishes a round source of light which can be turned in the direction of all meridians. It is supplied with an apparatus for measuring the distance of the mirror from the eye of the patient. This must be read in the original. As regards the theory of skiaskopy, that of the author does not seem to be materially at variance with those of Jackson, Thorington and others, whose works he does not seem to be familiar with. The monograph is well written, easily understood and a valuable addition to the literature on skiaskopy.

THE PUBLIC AND THE DOCTOR. By a Regular Physician. DR. B. E. HADRA, Dallas, Texas. Price, 50 cents.

This little book is a well-meant attempt to teach the public a good many things about the right kind of a physician, which it very often does not seem to appreciate. That it will have the success it should have, we doubt.

The make up might be very greatly improved.

CHIRURGIE DE L'ŒIL ET DE SES ANNEXES. By DR. FELIX TERRIEN. (311 Illustrations). [Paris: 1902. G. Steinheil]. (Surgery of the eye and its adnexa).

Terrien's surgery of the eye is a very comprehensive work, which is very profusely and well illustrated. As a peculiarity it treats of a great many non-surgical diseases of the eye, and might therefore almost be called a text-book on ophthalmology, preference being given to the surgery of the eye. At this late time it is hardly possible to give more than a compilation of all that is known of eye-surgery. But as a compilatory work it is greatly to be recommended on account of the simplicity of its descriptions and the many good illustrations.

ALT.

INDEX TO VOLUME XIX.

ORIGINAL ARTICLES.

PAGE.
Amblyopia, toxic 139
Angioma, cavernous 108
Astigmatism, transient 201
Argyrol, remarks on 289

Bleaching or distinct pallor of the temporal segment of the optic papilla 145

Clinical reports 225

Dislocation of the lens into the vitreous. Is it ever justifiable? . 161

Economic damage from accidental injuries to the eyes 240
Epithelioma of the ocular conjunctiva, a case of 353

Glasses, misuse of 129
Gumma, a separate, of caruncle and ocular conjunctiva 78

Heterophoria and resulting reflex neuroses 75
Heterophoria and the indications it gives for treatment 323

Implantation of a wire ball within the orbit 157
Intraocular epithelial new formations 97
Iridectomy in glaucoma, the indications for 65
Iridectomy in acute glaucoma, the manner of making 114

Landry's disease, a case with involvement of the eye muscles. 113

Membrane, thin fixed, springing from retina into vitreous 321
Muscle advancement, technique of 38

Ocular affections secondary to syphilis 230
Orbital tumors, two congenital 358

Post-operative accidents in successful cataract extractions 1

Radioscopy, a case illustrating the value of 332
Refraction, its difficulties and how to overcome them 193
Retinitis albuminurica of pregnancy 292
Retroflexion of the iris, traumatic 4

Sclero-keratitis and its treatment 373
Section and exsection of the rectus muscle 259
Sympathetic ophthalmia, a case of, cure of both eyes 175

Tenotomies, partial and graduated, our present knowledge of .. 257

Visual tests for children 33

TRANSLATIONS.

Mobility of the pupil in severe optic neuritis, by J. Hirschberg. 9
Muscle advancement, the technique of, by E. Landolt........ 33
Notes concerning the history of the invention of the ophthalmoscope, by R. Greef.............................. 14
The prevention of the blennorrhœa of the newly born by means of Credé's method..............................334, 361

CORRESPONDENCE.

Helmholtz and Ophthalmoscopy........................... 46
Was Helmholtz the original discoverer of ophthalmoscopy?... 85
Helmholtz and the ophthalmoscope........................ 158
Letter from Dr. G. E. de Schweinitz..................... 301

SOCIETIES.

American Medical Association, Section on Ophthalmology.... 212, 248, 279, 307, 344
American Ophthalmological Society........................ 218
British Medical Association, Section on Ophthalmology 53, 302, 373
Ophthalmic Society of the United Kingdom................. 19, 90, 117, 182, 251, 277, 365, 367
Western Ophthalmic and Oto-Laryngologic Association....... 51, 97, 116, 129, 161, 193, 225, 257

ABSTRACTS.

By Dr. W. A. Shoemaker.

Adrenalin.. 256
Adrenalin, dangers of.............................. 23
Anisometropia...................................... 28
Atrophy of optic nerve and strychnia............... 222

Brown-Sequard injections in optic atrophy.......... 150

Cataract operation in the aged..................... 61
Chancroid of the eyelid............................ 116
Congenital condition simulating choked disk........ 27
Congenital lens dislocation........................ 189
Corneal complications in conjunctivitis............ 221
Crossed eyes in children........................... 188
Cystadenoma of lacrymal caruncle................... 21

Descemetitis a symptom............................. 29
Desirability of further data on ophthalmia neonatorum...... 61

Diabetes and eye 187
Diphtheria of conjunctiva treated with antitoxin 258

Empyema of antrum, ptosis and diplopia 318
Endothelioma of lacrymal gland 30
Epicanthus 22
Epilepsy due to eye-strain 317
Eye-defects causing mental deficiency 127

Frost bites of cornea 62
Fundi of animals' eyes 159

Gangrene of lids 61
Glycosuric affections of eye 185
Gold ball for artificial eye 316
Gunpowder stains 318

Haab magnet 126
Hygienic and prophylactic treatment of myopia 315

Identification of criminals through eye 95
Idiopathic detachment of retina 62
Importation, wholesale, of trachoma 316
Infantile ophthalmia 220
Influence of accommodation on curvature of cornea 63
Insertion of rabbit's eye in capsule of Tenon 317
Iridectomy for glaucoma 286
Iridectomy in glaucoma 26

Malarial iritis 124
Microscopical examination of conjunctival discharge 286
Molluscum contagiosum 255
Monocular nystagmus 350

Nitrate of silver in the new-born eye 352

Open wound treatment, modified 24
Ophthalmic army work 95
Optic neuritis in brain disease 288
Orbital phlegmone and sympathetic ophthalmia 188
Osteoma of orbital plate of frontal bone 25
Origin of visual impulse 318

Phlyctenular conjunctivitis 160
Plea for early treatment of squint 223
Present position of ophthalmic art 27
Progressive myopia 125
Protargol in eye diseases 120
Pterygium, modern treatment 352

Resection of cervical ganglion 211

Spontaneous cure of senile cataract 221
Squint, cosmetic and visual results 31
Suprarenal gland in eye work 276
Suprarenal gland, therapeutic effect 287

Tuberculosis of eye 121

Unreliability of ophthalmometer and shadow test 189

X-Ray diagnosis of foreign bodies in eye 94

BOOK REVIEWS.

Book reviews 64, 128, 191, 378

PAMPHLETS.

Pamphlets 3, 8, 32, 173, 184, 190, 191, 364, 372

SERIAL

RE
1
A5
v.19

American journal of ophthalmology

GERSTS

RD